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MISSOURI RIVER BASIN WATER MANAGEMENT

PUBLIC HEARING held on January 23, 2002 at
the Quincy Holiday Inn, 201 South Third Street,
Quincy, Illinois at 7:00 p.m.

APPEARANCES:

Col. David Fastabend, Hearing Officer
Department of the Army
Northwestern Division, Corps of Engineers
12565 West Center Road
Omaha, Nebraska 68144-3869

Kathy A. Genenbacher, CSR
924 Rim Road
Quincy, Illinois 62301

1 PROCEEDINGS

2 COL. DAVID FASTABEND: Good evening. We've
3 got a little bit of wiring going on up front, but I
4 thought I would go ahead and get things started. I'm
5 General David Fastabend, Commander of the
6 Northwestern Division. My division goes all the way
7 from the Missouri River Basin and the Columbia River
8 Basin so I'm introducing myself as Commander of the
9 entire Northwestern Division. I know that you all
10 have local concerns, and we're here to hear all about
11 those local concerns today.

12 The Corps of Engineers is kind of uniquely
13 postured within our society to try to take these
14 projects that were built a long time ago and
15 understand all the multiple purposes for which they
16 were built and all the multiple state controllers
17 involved and how they are run and capture your input
18 and try to address those multiple purposes while
19 still complying with the Endangered Species Act and
20 all kinds of other environmental law. We can't do
21 that unless we get input from the people who live on
22 the river and make their living on the river. So
23 we're really very glad to have an opportunity to come
24 out here.

25 We understand that the Missouri is

1 connected to the Mississippi. You have got some
2 serious concerns I hear. We want to hear them
3 firsthand.

4 I have got some people here with me from
5 the Omaha office at my headquarters. I will point
6 out some of them to you. Roy McAllister there in the
7 blue sweater, Patti Lee right behind him, Jody
8 Farhat, Larry Cieslik, Paul Johnston. I don't know
9 if Betty Newhouse is here. There she is. John
10 LaRondeau. Have I got everybody on the team? I
11 think I have got it for right now. And they are part
12 of the Missouri River Master Manual Team.

13 They were here today. Some of you may have
14 had a chance to talk to them. If you did not, if we
15 have a break tonight or after the hearing I invite
16 you to chat with them. They have a wealth of
17 knowledge and understanding about the Missouri River
18 and the Missouri River Master Manual process. So we
19 have it set up front?

20 The hearing session will come to order. Our
21 purpose this evening is to conduct a public hearing
22 on proposed changes to the guidelines for the
23 Missouri River Main Stem System Operations. Before I
24 proceed, do we have any elected officials or their
25 representatives here who wish to be recognized this

1 evening? All right. I'll continue.

2 This hearing is being recorded by Kathy
3 Genenbacher, who will be taking verbatim testimony.
4 That will be the basis for the official transcript
5 and record of this hearing. This transcript with all
6 written statements and other data will be made part
7 of the administrative record for action. Persons who
8 are interested in obtaining a copy of the transcript
9 for this session or any other session can do so.

10 Persons interested in receiving a copy need
11 to indicate this on one of the cards available at the
12 table by the entrance. Also, if you are not on our
13 mailing list and want to be on our mailing list,
14 please indicate that on the card.

15 Now in order to have an orderly hearing it
16 is essential that I have a card from everyone
17 desiring to speak giving your name and who you
18 represent. If you desire to make a statement and
19 have not filled out a card, please raise your hand,
20 and we will furnish a card to you.

21 The primary purpose of tonight's session is
22 to help ensure that we have all the essential
23 information that we will need to make our decision on
24 establishing the guidelines for the future operations
25 of the Missouri River Main Stem System and that the

1 information we have is accurate. This is your
2 opportunity to provide us with that information. We
3 view this as a very important opportunity for you to
4 have an influence on the decision and for us to hear
5 your views. We are all glad that you are here
6 tonight.

7 I want you to remember that tonight's forum
8 is to discuss the proposed changes in the operation
9 of the Missouri River Main Stem System as analyzed in
10 the Revised Draft Environmental Impact Statement. We
11 should concentrate our efforts this evening on issues
12 specific to that decision.

13 It is my intention to give all interested
14 parties an opportunity to express their views on the
15 proposed changes freely, fully and publicly. It is
16 in the spirit of seeking a full disclosure and
17 providing an opportunity for you to be heard
18 regarding the future decision that we have called
19 this hearing. Anyone wishing to speak or make a
20 statement will be given the opportunity to do so.

21 The Missouri River Main Stem System
22 consists of all Corps of Engineers constructed and
23 operated projects, so officially that makes the Corps
24 of Engineers a project proponent, however, it is our
25 intention that the final decision on the future

1 operational guidelines for these projects will
2 reflect a plan that considers the views of all
3 interests, focuses on the contemporary and future
4 needs served by the Main Stem System and meets the
5 requirements established by Congress.

6 As Hearing Officer my role and
7 responsibilities is to conduct this hearing in such a
8 manner as to ensure the full disclosure of all
9 relevant facts bearing on the information that we
10 currently have before us. If the information is
11 inaccurate or incomplete, we need to know that, and
12 you can help us make that determination.

13 Ultimately, the final selection of a plan
14 that provides the framework for the future operations
15 of the Main Stem System will be based on the benefits
16 that may be expected to accrue from the proposed plan
17 as well as the probable negative impacts, including
18 cumulative impacts. This includes significant social,
19 economic and environmental factors.

20 Should you desire to submit a written
21 statement and do not have it prepared at this time
22 you may send it to the U.S. Army Corps of Engineers,
23 Northwestern Division, my office in Omaha, and
24 information with respect to addresses and everything
25 else is available at the back of the room. You may

1 also submit your comments by fax or electronically by
2 E-mail. If you need further information, as I said,
3 we can make that available to you as far as how to
4 contact us.

5 The official record for this hearing will
6 be open until 28 February 2002. To be properly
7 considered, your written statement must be post
8 marked by that date.

9 Before I begin to take testimony, I would
10 like to say a few words about the order and procedure
11 that will be followed. When we call your name,
12 please come forward to the lectern, state your name
13 and address and specify whether or not you are
14 representing a group, agency, organization or if you
15 are speaking as an individual. You will be given
16 five minutes to complete your testimony. If you are
17 going to read a statement, we would appreciate it if
18 a copy could be provided to the court recorder prior
19 to speaking so that your remarks will not have to be
20 taken down verbatim.

21 After all statements have been made, time
22 will be allowed for any additional remarks. During
23 the session I may ask questions to clarify points for
24 my own satisfaction. Since the purpose of this
25 public hearing is to gather information to be issued

1 in evaluating the proposed plan or alternatives to it
2 and since open debate between members of the audience
3 will be counterproductive to this purpose I must
4 insist all comments be directed to me, the Hearing
5 Officer.

6 With the exception of public officials or
7 their representatives, who will speak first, speakers
8 will be given an equal opportunity to comment.
9 Please remember speakers will be limited to five
10 minutes. We will be using a lighted timer. When the
11 yellow light comes on it means you have two minutes
12 of time remaining. When the red light comes on your
13 five minutes are up. No portion of unused time
14 allotted to each speaker may be transferred to any
15 other presenter.

16 The purpose of the hearing is to permit
17 members of the public an equal opportunity to
18 concisely present their views, information or
19 evidence.

20 And I understand we still have no elected
21 officials here. I need to back up a little bit,
22 point out there are some people from some cooperating
23 agencies that are here with us this evening as well.
24 Mr. Jimmy Black from the Western Area Power
25 Authority, Miss Pam Haverland from the USGS. I think

1 she stepped out, but any way, USGS is here tonight
2 with us as well.

3 Okay. I will move the microphone to the
4 podium, and we will take a look at the cards. Oh,
5 I'm sorry, first we are going to show a video.

6 (Whereupon a video
7 was shown.)

8 COL. DAVID FASTABEND: Okay. We won't put
9 you through that second video since you had the real
10 thing tonight.

11 MR. CIESLIK: Michael Wells, representing
12 the Governor of Missouri, Bob Holden.

13 MR. WELLS: Good evening, General. My name
14 is Mike Wells, and I am Chief of Water Resources for
15 the State of Missouri. Thank you for allowing me the
16 opportunity to present additional testimony on this
17 most important issue to the State of Missouri.

18 On Monday night of this week D.K. Hirner,
19 Deputy Chief of Staff for Governor Bob Holden,
20 presented comments for the Governor at the public
21 hearing in Cape Girardeau, Missouri. I will take
22 this opportunity to provide additional information in
23 support of the Governor's testimony.

24 One of the points in Governor Holden's
25 comments was his opposition to the proposed

1 reductions of downstream flows. In support of the
2 Governor's position and for the public record I am
3 submitting two schematic drawings which clearly
4 demonstrate how all five of the new plans will shift
5 water to the upper basin reservoirs by setting
6 triggers for reducing service to downstream users
7 significantly higher than the current plan. These
8 higher triggers will significantly increase the
9 frequency in which flow support for downstream uses
10 will be reduced. These triggers must be drastically
11 lowered in order to honor the Federal Government's
12 commitment to protect Mississippi River commerce and
13 maintain it as a reliable and cost effective
14 transportation mode.

15 In the Governor's comments he also
16 expressed his displeasure that the impacts of the
17 five new plans would have on Mississippi River
18 navigation have not been thoroughly analyzed and
19 displayed in the RDEIS for public review. As an
20 example of the adverse impacts, I have attached two
21 graphs showing how Mississippi River navigation would
22 have been impacted the past two years had the
23 Modified Conservation Plan been in operation.
24 Unfortunately for Mississippi River interests, the
25 Modified Conservation Plan is imbedded in all five of

1 the new plans under consideration.

2 In addition, Missouri is committed to
3 improving the environmental health of the Missouri
4 River while ensuring the economic security of its
5 citizens. Although there have been some successful
6 habitat restoration projects on the Missouri River,
7 there are many additional opportunities to greatly
8 expand these efforts.

9 The St. Louis Corps District has over 20
10 years of experience in the use of environmental river
11 engineering to create and improve fish and wildlife
12 habitat on the Mississippi River without implementing
13 flow alterations.

14 Governor Holden has encouraged the
15 Northwest Division to consider implementing habitat
16 restoration projects similar to those undertaken by
17 the Corps' St. Louis District along the Mississippi
18 River. These projects have proven to be tremendously
19 effective. The Governor requests that the same
20 engineering techniques be used on the Missouri River
21 to restore habitat.

22 I am submitting for the record tonight the
23 most recent copy of the St. Louis District's handbook
24 entitled Environmental River Engineering on the
25 Mississippi.

1 Thank you tonight for the opportunity to
2 comment.

3 COL. DAVID FASTABEND: Thank you, Mr.
4 Wells.

5 MR. CIESLIK: Frank Becker.

6 MR. BECKER: Good evening, General. My name
7 is Frank Becker. I'm an agricultural producer in
8 Bowling Green, Missouri, which is just a few miles
9 south of here. I and my brother produce corn,
10 soybeans, wheat, cattle and hogs and about 2000
11 acres. I'm here in town tonight representing the
12 Missouri Corn Growers Association. I'm on the Board
13 of Directors of Missouri Corn Growers and serve as
14 Vice President. Missouri Corn Growers Association is
15 a grass roots organization representing corn growers
16 across the state of Missouri.

17 MCGA will support the Current Water Control
18 Plan because it is the only feasible alternative
19 presented by the Corps of Engineers. All other
20 alternatives that are being presented would
21 absolutely be devastating for agriculture.

22 We are opposed to what is referred to as a
23 spring rise. First, increasing water release flows
24 would flood or decrease drainage on thousands of
25 acres in the Missouri River bottoms. This proposed

1 controlled flood could be devastating not only for
2 the potential massive flooding but also the delayed
3 plantings due to internal drainage problems in the
4 spring.

5 It is also proposed that the increased
6 spring flows would be offset in the late summer by a
7 split navigation season. During July through
8 September water releases would fall below levels
9 needed to maintain navigation. This would end
10 navigation on the Missouri River.

11 Now we have come to why a farmer on the
12 Mississippi River is interested in the Missouri
13 River. As you know, barges are the low cost
14 transportation alternative for the agricultural
15 commodities and input. The Missouri River and the
16 Mississippi River are a river system. Barge
17 transportation is a system that requires that both
18 the Missouri and Mississippi River to be maintained
19 and supported as a system.

20 The Missouri River is also a major supplier
21 of water for the Mississippi River. The Missouri
22 River during the drought of 1988 discharges accounted
23 for 63 percent, that's almost two-thirds, of the
24 water flowing past St. Louis from July to October.
25 If the planned flow reduction by the Corps would have

1 coincided with another drought, navigation on the
2 Upper Mississippi would have been interrupted costing
3 the nation's farmers and industries millions of
4 dollars a day.

5 Navigation on the river system supports
6 more than 400,000 jobs, and over 1.5 million dollars
7 of corn is shipped down the river on barges every
8 year. Farmers depend on the river transportation for
9 their livelihood, and the US depends on us, the
10 farmers, for exports and trade.

11 Barge transportation also places
12 competitive pressure on the regional rail rates. It
13 has been demonstrated numerous times in the areas
14 throughout the country that do not have access to
15 barge transportation that the rail rates are higher.
16 In your, the Corps', analysis it is estimated that
17 the barge competition reduced rail rates in the
18 Missouri River Basin by up to 2 million dollars
19 annually. The importance of barge competition is
20 further heightened by the continued consolidation
21 within the rail industry.

22 We also have concerns about what the Corps
23 calls adaptive management. Through this proposal,
24 adaptive management, the Corps will be given
25 considerable power to make flow release adjustments.

1 These adjustments would be made primarily through
2 consideration of one interest, the endangered
3 species. If it is determined by the Government
4 agencies that for the sake of the species it is
5 needed, the highest spring rise and probably the
6 lowest summer flows could be implemented. We cannot
7 assume that any other alternative would be proposed
8 and accepted by the Fish and Wildlife Service. That
9 is the only thing that they have ever come up with.

10 MCGA is also concerned that we would lose
11 the ability to have public input into these decisions
12 on flow management. This is something that's been
13 guaranteed us by the National Environmental
14 Protection Act we would not have this chance.

15 In summary, gentlemen, a spring rise is
16 unscientific and is unwanted. It threatens farms and
17 towns with increased flows and financial losses
18 through reduced internal drainage. The reduced summer
19 flows would end navigation on the Missouri River and
20 greatly threaten the Mississippi River navigation.

21 Thus, MCGA supports the Current Water
22 Control Plan. Another way to put it is, gentlemen,
23 it ain't broke so why are we trying to fix it. Thank
24 you.

25 COL. DAVID FASTABEND: Thank you, Mr.

1 Becker.

2 MR. CIESLIK: Brent Hoerr.

3 MR. HOERR: Brent Hoerr, representing the
4 Marion County Drainage District. Gentlemen, farmers
5 that are in the Marion County Drainage District makes
6 up a small district of about 4,000 acres, and we rely
7 on the river for our crop inputs and also exporting
8 our crops to foreign markets since we have that
9 market advantage here along the river.

10 We feel that the detrimental effects of the
11 lower flows in the summer would be a great hardship
12 for us and those times we are living in right now,
13 and the alternatives that were proposed do not
14 improve the situation, and we don't feel they should
15 even be considered. We are just -- think that the
16 Water Control Manual that is in effect now should be
17 continued until a balanced approach can be pursued,
18 and we do not feel that a balanced plan has been
19 forthcoming, and we are waiting to see one that we
20 can accept.

21 COL. DAVID FASTABEND: Thank you, Mr.
22 Hoerr.

23 MR. CIESLIK: Gerald Jenkins.

24 MR. JENKINS: Good evening and thank you for
25 coming here to Quincy. We welcome you to this town,

1 and we hope that you know that you will leave here
2 with some better understanding of what our thoughts
3 are referencing these river issues.

4 My name is Gerald Jenkins. I am the
5 manager of Ursa Farmers Coop, which is located just
6 north of Quincy. We have two river loading
7 facilities that we load barges on, and naturally the
8 river is very instrumental in what we do.

9 I am really not here to really talk about a
10 lot of the traditional things. I would ask that you
11 kind of bear with me because I don't have anything
12 written here, but what I want to try to do is leave a
13 message of the economics and how and who might be
14 affected by some of the economics of some of these
15 decisions.

16 This whole matter of this river issue is
17 much larger and much more complex than I am here to
18 realize, but I also realize that economics will and
19 do play a part in the decision making of what will
20 take place here, and I merchandise grain for Ursa
21 Farms Coop, and I talk to a lot of the people,
22 merchandisers throughout the country, and I do feel I
23 have a general understanding of how that system works
24 and economics of merchandising.

25 What I am here to try to make sure that you

1 are aware of in your decision making is many times
2 decisions are made from economics and they are based
3 off of who it is going to affect, what percentage of
4 the population or basically of the area is it going
5 to affect if we make different decisions, and many
6 times decisions in agriculture are made and based
7 around the fact that basically less than two percent
8 of the population in this country are producers of
9 agriculture, so decisions I think contend to believe
10 and be made off the fact that we are only affecting
11 two percent of the population, not 98, so we have the
12 economics tell us and the percentages tell us to do
13 that, but really the way merchandising is set up in
14 this country it is not intended to do it in that
15 manner.

16 What possible effects can happen from the
17 changing of the flow of the water from the Missouri
18 into the Mississippi is to reduce that level of water
19 in the river at different times creating
20 transportation problems, which is going to drive the
21 cost of grain up at the gulf. When you increase the
22 cost of grain at the gulf you decrease exports, and
23 the way the system is set up the first thought is
24 well those effects are going to be affected by the
25 two percent of the farmers that are farming the

1 ground, but the way it is set up when you decrease
2 exports and drive the cost of the grain up at the
3 gulf, which it would do, then what is going to happen
4 is that LDP payments, subsidies that are given, paid
5 out by the Government are going to be increased, and
6 actually the person that is going to burden the
7 majority of those expenses is going to be the
8 Government.

9 Therefore, it is not the two percent that's
10 going to be paying the majority of this potential
11 increase in cost or economic effect. It's actually
12 going to be the Government. Thus, the 98 percent of
13 the regular population is going to actually incur
14 some of these costs. Now the agriculture industry
15 would incur those costs also, but I guess I'm here to
16 leave you with one thought. As you make some of
17 these decisions and you look at economically how it
18 affects things, please keep in mind it's not
19 affecting the minority, the 2 percent or actually the
20 9/10 of 1 percent of the national population that's
21 doing the farming. It's actually affecting
22 everybody, all the taxpayers. So if you change that
23 flow of the river and drive that cost up because of
24 that result it's going to affect everybody.

25 Thanks for your time.

1 COL. DAVID FASTABEND: Thank you, Mr.
2 Jenkins.

3 MR. CIESLIK: Kevin Rund.

4 MR. RUND: Good evening, Colonel Fastabend.
5 My name is Kevin Rund. I'm Director of Local
6 Government and Transportation Specialist for Illinois
7 Farm Bureau, our state's largest general farm
8 organization with over 350,000 members.

9 Illinois Farm Bureau opposes the flow
10 changes now being considered. We are not simply
11 opposed to change, but with the exception of the
12 Current Master Plan, none of the options proposed are
13 acceptable to us.

14 Our policy says we support efforts to come
15 to a mutually acceptable revision to the Missouri
16 River Master Water Control Manual while protecting
17 against proposals that would regulate the river's
18 flow to the detriment of the waterway navigation
19 system.

20 Our policy also says we will urge the Corps
21 of Engineers to adopt water flow management policies
22 that avoid the flooding of farmland situated below
23 any reservoir or dam managed by the Corps.

24 Now because this evening's emphasis is
25 impacts to the Mississippi River I'm going to

1 highlight only two key reasons for our opposition to
2 the change.

3 Number one, of course, the changes proposed
4 on the Missouri would cause negative impacts in
5 Illinois.

6 Being on the eastern side of the
7 Mississippi, not many of our members would be
8 directly affected by the flooding caused by the
9 proposed spring rise, but every one of our members
10 would be impacted by the summer low flows and split
11 navigation season being considered, and that goes for
12 all the farmers in the other upper Mississippi River
13 states as well.

14 Disrupting navigation on the Missouri would
15 cause ripple effects throughout the region and the
16 cross modes of transportation. We would feel the
17 bite in Illinois, and it would come in the form of
18 higher transportation costs due to lowered
19 competition. It would come in the form of worsened
20 air pollution because of more trucks and trains
21 operating in what is already non-attainment area.
22 And in dry years it would come in the form of lost
23 jobs, wages, income and tax revenue because of the
24 inefficient navigation on the Mississippi.

25 Now the Corps has to look beyond the

1 Missouri Basin to measure the full impacts of the
2 proposals to change the manual. The changes proposed
3 on the Missouri would have some negative impacts in
4 Illinois.

5 Point number two, experimentation should be
6 contained, not pervasive.

7 The National Academy of Science has made it
8 clear that mimicking the natural flows in the
9 Missouri River would not guarantee recovery of the
10 three species in question. It would require some
11 experimentation to learn how effective that approach
12 might be, but that experimentation should be
13 conducted on a limited scale in controlled settings.
14 It would cost less to create hundreds, perhaps
15 thousands, of acres of habitat that could be studied
16 in a controlled environment than would be the cost
17 forced on area residents and economies through
18 system-wide experimentation.

19 The adaptive management approach included
20 among these proposals would be experimentation on a
21 massive scale with the Missouri Basin the petrie
22 dish. It is a trial and error approach that risks
23 people's well-being and livelihoods. If done here we
24 are concerned where the Corps might apply that
25 approach next. It would not be acceptable in

1 Illinois, and we support our counterparts across the
2 Mississippi in saying it is not acceptable in
3 Missouri.

4 There are smaller scale approaches to
5 experimentation that would risk far less. The Corps
6 should look to those first. Experimentation should
7 be contained, not pervasive.

8 In conclusion, I want to commend the Corps
9 for its persistence in attempting to find a balance
10 among the myriad of interests in the Missouri Basin.
11 I do urge you to not adopt measures that would
12 increase flooding or reduce the efficiency of
13 navigation on either the Missouri or Mississippi
14 Rivers. Instead, for now continue operating under
15 the Current Water Control Plan.

16 Thanks for listening.

17 COL. DAVID FASTABEND: Thank you, Mr.
18 Rund.

19 MR. CIESLIK: Robert Bilderback.

20 MR. BILDERBACK: I'm an orthopedic surgeon,
21 and I was down in the St. Louis area in '88 and came
22 across an interesting finding in the water supply for
23 St. Louis County. Weldon Springs, they reported -- I
24 was working with the Coalition for Environment, and
25 they loaned me a Geiger counter, and the nuclear

1 plant at Weldon Springs of course is uphill from the
2 well supply down in the flood plain, and they said
3 the ponds at Busch area was contaminated with nuclear
4 material, so I got a Geiger counter and was walking
5 through the woods and happened to stumble on the
6 water supply for the St. Louis County and noted that
7 the well in the middle of the field, number 13, for
8 some reason was plugged up. They had a sign. It was
9 obviously not active. The rest of them were active.
10 And I walked up to the well with my Geiger counter,
11 and it almost went off the side, and I have got two
12 questions. The nuclear material, since that whole
13 area is flooded, does that wash right down the
14 river? Are you folks monitoring that? Is that
15 another agency?

16 COL. DAVID FASTABEND: I will have to get
17 back to you on that.

18 MR. BILDERBACK: And the other question that
19 I had is what do you do when you take out the silt
20 from the Mississippi and the Missouri River, which is
21 loaded with heavy metals, organophosphates? They say
22 in the Hudson River, which has the same things,
23 PCB's, they said they can't find any place to take
24 that stuff. Do you have the same problem with that
25 material?

1 COL. DAVID FASTABEND: Again, Mr.
2 Bilderback, I'm going to have to get some facts on
3 those issues. I have to confess to you I am not
4 personally aware of those.

5 MR. BILDERBACK: In the other materials it
6 sounds like a good idea. It looks like to me the
7 barges can run half the time. Is that the story with
8 the way I understand it? I'm not a barge guy. But
9 they run half the time in the year. Can't they run
10 when the water is high, but they can't run when it is
11 low? You're going to plug it up, aren't you, for six
12 months of the year?

13 COL. DAVID FASTABEND: The various options
14 have various impacts.

15 MR. BILDERBACK: But at the time when it's
16 high the barges can run, can't they?

17 COL. DAVID FASTBEND: Mr. Bilderback, I have
18 to ask you do you have any direct comments?

19 MR. BILDERBACK: I think it's a good idea.
20 It's think a good idea and you should do it.

21 MR. CIESLIK: Michael Klingner.

22 MR. KLINGNER: Michael, Klingner, Quincy,
23 Illinois. Thank you for this public meeting. The
24 tri-state area of Southeast Iowa, Northeast Missouri
25 and West Central Illinois is very concerned with the

1 proposed changes to the Missouri River Master
2 Manual.

3 I'm Mike Klingner, Vice Chairman of the
4 Upper Mississippi, Illinois and Missouri Rivers
5 Association, UMIMRA, and Chairman of the Great River
6 Economic Development Foundation.

7 The river network of the Illinois, Missouri
8 and Mississippi Rivers are extremely important for
9 the economic well-being of our region. We are an
10 agricultural based economy essential to the nation.
11 The most cost effective and environmental mode of
12 transportation of bulk goods is by barge, and during
13 dry weather conditions the Missouri River provides up
14 to two-thirds of the flow in the Mississippi River
15 between St. Louis and Cairo. Any Missouri River
16 change that damages navigation is unacceptable. An
17 essential criterion of change should be to improve
18 all the basic needs of the river; navigation, flood
19 control and environment.

20 Instead of experimenting with a pallid
21 sturgeon viagra, also known as a flood pulse, the
22 Corps should focus on the basics; reliable
23 navigation, realistic environmental improvements and
24 adequate flood control. Any change that hurts the
25 basics should not be considered.

1 We respectfully request maintaining the
2 Current Water Control Plan. Over the next few years
3 the Corps will be involved in comprehensive planning
4 for the Illinois and Mississippi Rivers. During
5 planning efforts it would be possible to continue
6 research on side channel simulated flood pulses and
7 off channel simulated environments or other
8 environmental studies. The long range goal of the
9 Water Control Plan should be to develop a system
10 where economic and environmental solutions co-exist.
11 Before any change is made to the management of the
12 Missouri River a Missouri River comprehensive plan
13 should be completed. UMIMRA and GREDF are here to
14 assist the Corps of Engineers to obtain authorization
15 and appropriations in this effort. Thank you very
16 much.

17 COL. DAVID FASTABEND: Thank you, Mr.
18 Klingner.

19 MR. CIESLIK: Lynn Muench.

20 MS. MUENCH: Good evening, gentleman. My
21 name is Lynn Muench, and I'm the Vice President of
22 the Midcontinent Office of the American Waterways
23 Operators. AWO represents the towboat and barge
24 operators on our coastal and inland waterways
25 including on the Missouri, Mississippi and Illinois

1 Rivers. Today I am here to articulate our industry's
2 concerns with the alternatives presented in the RDEIS
3 and our vision of the future.

4 The construction of the dams on the
5 Missouri River and the locks and dams on the
6 Mississippi River were begun in the 1930's. Congress
7 mandated the nine foot channels to move agricultural
8 products in a cost effective manner from the
9 landlocked midwest to the coasts and to export
10 markets. Before these rivers became a reliable third
11 coast farmers were held hostage to high rail rates.
12 Farm income was often devastated by these high
13 rates. With the construction of the waterway super
14 highway low cost transportation became available, and
15 rail was forced to compete for business.

16 This phenomenon, otherwise known as water
17 compelled rates, saves shippers in the region 900
18 million dollars per year in decreased rail and truck
19 rates when forced to compete. The towboat industry
20 is dismayed that these numbers are not proportionally
21 evaluated for the immediate regional economic
22 benefits or costs. We call on the Corps to correct
23 their methodology to fully reflect the economic
24 hardship the region will face without river
25 navigation.

1 Missouri River flow changes would impact
2 the quality of life here in the Upper Mississippi
3 River Basin. The impacts on the Upper Mississippi
4 River are either unknown at this time or grossly
5 underestimated in the RDEIS. The Corps has either
6 not evaluated, considered or released information on
7 the following:

8 Number one, according to the Missouri
9 Department of Natural Resources split navigation,
10 otherwise known as low summer flows, would render the
11 Mississippi River unreliable in at least 27 out of
12 100 years. How will this impact the Upper Mississippi
13 economy and the American farmer? Will agricultural
14 exports still be able to be competitive in the world
15 market? Are we ready to put 900 million dollars in
16 savings to shippers, including farmers, due to
17 water-compelled rates in jeopardy on an annual
18 basis?

19 Number two, the spring rise, otherwise
20 known as a planned spring flood, would vacillate in a
21 short period of time the water levels in the St.
22 Louis Harbor. There is no evaluation in the RDEIS of
23 how fast the St. Louis Corps District could dredge
24 that harbor. How much delay would be caused to the
25 shippers? Why are shippers' increased costs not

1 included in the economic cost?

2 Number three, the Corps did not take into
3 account the effect of water depletions in the Upper
4 Missouri Basin, therefore, all the data in the RDEIS
5 on water available for flows to support navigation is
6 incorrect. These depletions will negatively impact
7 the reliability of navigation on the Mississippi
8 River.

9 And number four, the loss of jobs in
10 auxiliary businesses such as shippers, terminals, and
11 ports --

12 COL. DAVID FASTABEND: Mrs. Muench, are you
13 talking about depletions in other alternatives or
14 other depletions?

15 MS. MUENCH: Other depletions. Loss of jobs
16 in auxiliary businesses such as shippers, terminals
17 and ports were not evaluated. Ripple effect jobs
18 were also not considered.

19 The model to evaluate economic impacts is
20 extremely narrow and grossly underestimates the
21 negative impact on the Upper Mississippi Basin and
22 the Missouri Basin. AWO requests that the Corps
23 re-evaluate their economic analysis. The study must
24 reflect the true impacts to the entire nation
25 including the Upper Mississippi River Basin.

1 The waterways industry provides the nation
2 with the safest, most environmentally friendly and
3 cost effective form of transportation. While others
4 have talked about the environment and improving
5 lives, AWO members have taken concrete actions like
6 the required Responsible Carrier Program to protect
7 the river environment, our air and the safety of our
8 employees and citizens. All proposals except the CWCP
9 will have negative environmental impacts and effects
10 that have not been evaluated.

11 What species will be negatively affected by
12 these proposals? Will there be an increase in
13 sedimentation that will affect our water quality?
14 How much will it cost our communities for air
15 pollution cleanup if the Missouri and Mississippi
16 River are both rendered unreliable and modal shifts
17 occur? How many lives will be lost if product must
18 move off the river and onto the roads or rail? None
19 of these issues are evaluated in the study. If the
20 RDEIS is to represent true national impacts, they
21 must be.

22 Without further information AWO members
23 strongly urge the Corps to choose CWCP as its
24 preferred alternative and work to create habitat for
25 threatened and endangered species in a way that does

1 not endanger America's economic prosperity, the
2 American farmer or the environment.

3 Last I would like to make a few brief
4 comments on the recently released NAS study.

5 Number one, the NAS indicates that the
6 introduction of non-native species is one of the key
7 reasons for the decline in native species.
8 Eliminating the United States Fish and Wildlife state
9 hatcheries' annual introduction of non-native fish
10 would be a first step to eliminate this problem
11 without manipulating flows.

12 Number two, NAS suggests that the river
13 should be managed in segments. It is impossible to
14 segment the river below Gavin's Point without
15 building more dams. This is not logical or
16 practical.

17 Number three, NAS, although not tasked to
18 do so, commented that the 1950's traffic projections
19 for the Missouri River were overestimated. This is
20 not true. Traffic was well on track to reach or
21 exceed expectations before the Corps changed the
22 rules in the 1980's. Since that time business on the
23 river has moved from five year contracts to a spot
24 basis, and docks and terminals have been disinvested.
25 Why would any sane business invest in a

1 transportation system with its future so
2 unpredictable? The adoption of CWCP could positively
3 influence the future of investment and traffic.

4 I would like to thank the Corps for this
5 opportunity. How we decide to balance multiple uses
6 of this important national treasure will indicate how
7 much we as a nation value economic prosperity, the
8 health of the family farm and our environment.

9 In summary, AWO remains strongly opposed to
10 any change in the Missouri River reservoir operations
11 that would jeopardize Missouri River or
12 mid-Mississippi navigation and economic benefits to
13 the nation and to the region. Thank you.

14 COL. DAVID FASTABEND: Thank you, Miss
15 Muench.

16 MS. MUENCH: One brief thing too I would
17 like to bring to your attention that three
18 legislative bodies in Missouri, Iowa and South Dakota
19 have passed resolutions to really maintain the CWCP,
20 and if you would like that we would be more than
21 happy to get those resolutions for you.

22 COL. DAVID FASTABEND: I would be glad to
23 see it.

24 MR. CIESLIK: David McMurray.

25 MR. MCMURRAY: Good evening. Welcome to the

1 Upper Mississippi River. I'm Dave McMurray, and I am
2 serving as Chairman of the Upper Mississippi,
3 Illinois, Missouri Rivers Association. Thank you for
4 adding this hearing to your schedule. We appreciate
5 the opportunity to comment on the proposed revisions
6 to the Missouri River Master Water Control Manual.

7 Our association is comprised of members
8 along these three rivers. Our members are drainage
9 districts, communities, businesses, associations and
10 individuals. We wish to see improved flood control,
11 navigation, recreational, economic development and
12 environmental conditions on each of these three
13 important components of our national infrastructure.
14 We have previously submitted written comments on the
15 proposed revisions and have had representatives at a
16 series of these meetings.

17 We do not believe that dismantling our
18 river valley infrastructure is a valid goal, nor is
19 it a valid guiding philosophy for any management
20 change. The rest of the world is improving their
21 river infrastructure while we seem content to allow
22 our system to merely meet the needs of the 1930's and
23 40's. In fact, without continued maintenance it will
24 not even continue to meet the needs of that long past
25 era.

1 We believe the proposed changes in the
2 operating manual would be a great disservice to
3 Middle America and a great disservice to the nation.
4 As President Bush recently suggested, the river
5 system is the spine of the nation. We all know a bad
6 back does not help us get our work done. Whether we
7 are looking at the comparison literally or
8 figuratively, a weak spine is debilitating.

9 Administrative rules that affect people
10 quite often create a situation where not all will be
11 happy or well served by the results. In this case,
12 however, we have a set of operating procedures in
13 place for many years that have worked well and for
14 the most part have achieved the original intended
15 results. Implementation of the proposed changes to
16 this system in the proposed manner will only serve to
17 weaken the system. It will hurt communities,
18 individuals and political units and will cost great
19 sums in loss of property values, productivity and
20 governmental costs.

21 Navigation is an enabler for growth, an
22 improved standard of living and for jobs. Where we
23 have modernized the system, growth has been good.
24 The Ohio River, the lower Mississippi River and
25 elsewhere reflect that growth. That growth has been

1 broad based. We need to improve the system rather
2 than to limit or destroy it.

3 Flood control is an enabler of growth, an
4 improved standard of living and jobs. Where we have
5 modernized the system, growth has been good. That
6 growth has been broad based. We need to improve the
7 system rather than ignore or severely weaken it.
8 Additional spring releases will threaten the river
9 valley from Gavins Point to Cairo and possibly
10 beyond.

11 Improved recreation is an enabler for
12 growth. It is the result of an improved standard of
13 living and jobs. Where we have modernized the
14 facilities, growth has been good.

15 We believe the environment stewardship is
16 an important component in developing these plans. We
17 do not believe that restricting those conditions to
18 the 1800's or any other static time is a proper
19 goal.

20 We respect the idea of adaptive management
21 in the sense that science and our knowledge of how to
22 utilize it does change. Adaptive management based on
23 speculation is not valid. We do not believe that
24 adaptive management under the control of the current
25 interpretation of the Endangered Species Act is

1 valid. When any specie, and I repeat any specie, has
2 more rights and protection under the law than a human
3 or a human's habitat we do not have a system that
4 will allow an adaptive management system to work
5 correctly.

6 The above comments apply to the entire
7 river system, the Missouri, Mississippi and
8 Illinois. You have been advised of the various
9 problems that will be exacerbated by any changes in
10 the Master Manual. We only wish to note we are in
11 agreement with the concerns expressed by the Missouri
12 constituency. We believe you are contemplating a
13 huge increase in risk and cost to many for a few
14 acres of possibly improved habitat. We believe you
15 are also putting at risk business development along
16 the Upper Mississippi River and the Illinois River by
17 increasing the magnitude of spring floods,
18 jeopardizing navigation due to the more frequent
19 restricted summer flows and minimizing the impact of
20 future potential depletions.

21 The study seems to disregard or minimize
22 those known results for the sake of several
23 possibilities and unknown results. We do not support
24 testing hypotheses and exploring promising changes on
25 the backs of people, their businesses and

1 communities. We do not believe the suggested
2 alternatives serve the original Missouri River
3 project's purpose. We do not believe the
4 alternatives proposed are valid. We request that the
5 current Missouri River Master Manual be retained, and
6 thank you for your time and consideration, and for
7 the record, also I submitted a copy of the letter to
8 the President by nine governors of the Missouri River
9 Master Manual for reference in case it has not been
10 admitted as part of the documents, signed by the
11 Governor of Missouri as well as the Governor of
12 Illinois.

13 COL. DAVID FASTABEND: Was that the letter
14 of last June?

15 MR. MCMURRAY: March.

16 COL. DAVID FASTABEND: March? Thank you,
17 Mr. McMurray.

18 MR. MCMURRAY: Thank you.

19 MR. CIESLIK: Larry Matteson.

20 MR. MATTESON: Yes. My name is Larry
21 Matteson. I represent the Burlington -- West
22 Burlington Chamber of Commerce, the L.W. Matteson,
23 Incorporated and Matteson Marine Service. We are a
24 marine construction dredging firm and a tugboat
25 service based in Burlington, Iowa.

1 I'm here mainly to echo the concerns that
2 have already been brought up about the impact -- the
3 negative impact of the proposals to the navigation on
4 the Mississippi River, and I guess what I'm trying to
5 figure out is why at one time we had what was the
6 pride of the world's navigation system and all of the
7 developing countries that are in competition with us
8 are developing their navigation system and we seem to
9 want to dismantle ours and impede it.

10 At some point in time I think we're going
11 to have to explain to our grandchildren or great
12 grandchildren why we allowed this to happen.

13 That's all I have to say. Thanks.

14 COL. DAVID FASTABEND: Thank you, Mr.
15 Matteson.

16 MR. CIESLIK: Franco Owens.

17 MR. OWENS: Good evening. My name is Franco
18 Owens. I am the Chairman of the Grain Merchandising
19 International Trade Transportation Committee, the
20 Iowa Corn Growers Association. The Corn Growers
21 Association is the country's oldest and largest corn
22 growers association, and on behalf of the over 6,000
23 grower members we bring farmers together to manage
24 issues that advance the Iowa corn industry. Thank
25 you for the opportunity to present testimony on this

1 important issue.

2 Let me start by saying that we all should
3 be concerned when the debate over the Missouri River
4 is characterized as a simple problem where a simple
5 solution will save birds and fish, the alternatives
6 currently under consideration by the Corps. The Iowa
7 Corn Growers support the Current Water Control Plan.

8 Let's just stop a minute to focus on the
9 effects on the people, farmers and communities
10 downstream. Proposals to recreate the Missouri with
11 a spring rise in split navigation season will do much
12 more than halt barge traffic. Spring flooding will
13 saturate thousands of acres of farmland delaying or
14 denying the farmers the opportunity to plant,
15 essentially taking that fertile land out of
16 production. That would devastate farmers even if the
17 farmer's economy were strong.

18 By opting for spring rise the Corps of
19 Engineers would essentially be putting a stamp of
20 approval on putting those farmers out of business.
21 Today when we are struggling to stay in business, a
22 spring rise would force many of us off the land, and
23 that's devastating news for the Western Iowa -- for
24 Western Iowa's many river communities. And in the
25 eyes of some activists the continued viability of

1 Iowa's 8 billion dollar agricultural economy is a
2 small price to pay to try to recreate the Missouri
3 River of yesteryear if it means boosting the
4 recreation industry of area neighboring states. The
5 irony of it all is many of these same activists who
6 are advocating for spring rise are the first to cry
7 outrage when they think the family farmer may be
8 threatened.

9 Let me tell you this. This is more than a
10 threat to family farmer on the Missouri. It's a
11 death penalty. But the damage wouldn't be limited to
12 just agriculture or just Western Iowa. Lowering
13 Missouri levels would also mean increased stress on
14 our roadway system and could halt the grain that
15 currently travels on the Missouri in large
16 semi-trucks that take 14,000 semis to carry the
17 load.

18 Lower levels in the summer would also mean
19 that hydroelectric power plants can't produce energy,
20 therefore, thereby forcing countless communities to
21 look elsewhere in the already overburdened power
22 grid.

23 Perhaps the more appropriate question is
24 should downstream states support other state's
25 tourism industries on a speculative environmental

1 plan at the expense of long term viability of our
2 economy?

3 Simple solutions to recreate the Missouri
4 will cause complex problems for everyone along the
5 Missouri. Let's keep the Current Water Control
6 Plan.

7 COL. DAVID FASTABEND: Thank you, Mr.
8 Owens.

9 MR. OWENS: And just a word of my own, we
10 were figuring out how much it would cost an internal
11 -- I'm from Central Iowa. It would raise my basis
12 10 cents a bushel, which on my farm would be about
13 \$5,500.00 a year that I would be paying extra to ship
14 grain. Thank you.

15 COL. DAVID FASTABEND: Thank you.

16 MR. CIESLIK: Garry Niemeyer.

17 MR. NIEMEYER: General, good evening. I
18 appreciate the opportunity to testify today on behalf
19 of the Illinois Corn Growers Association. My name is
20 Garry Niemeyer. I raise corn and soybeans in
21 Glenarm, Illinois, and I'm currently the president of
22 the association.

23 ICGA is opposed to higher reservoir levels
24 in the upper basin lakes of the Missouri River. You
25 may rightfully ask why the opinion of an Illinois

1 association should be heard in regard to this issue,
2 and the answer is simple. Our river systems cannot
3 be managed in a way that looks at just a single river
4 or a single portion of a river. The linkage between
5 our rivers and streams is direct, and this is very
6 evident when you look at the relationship of the
7 Missouri, Mississippi and Illinois Rivers.

8 Farmers in at least a half dozen Midwestern
9 states depend on the efficient operation and
10 dependability of river transportation for their
11 livelihood. The same can be said of all US citizens
12 who benefit from the boost agricultural exports give
13 to our economy and our trade balance. The entire
14 public also benefits from the flow of non-ag goods
15 from road salt to construction materials, which would
16 be significantly more expensive without the benefit
17 of efficient and dependable river transportation.

18 A good example of the interdependence of
19 our river systems is the importance of the Missouri
20 River water contribution to the Mississippi. During
21 the summer and early fall the Missouri can contribute
22 more than 60 percent of the water flow entering the
23 Mississippi near St. Louis, and we have ample
24 experience in what drought induced changes in the
25 Missouri's water volume can do to river traffic on

1 both the Mississippi and Illinois River. It can turn
2 sections of the Mississippi into beach property and
3 bring river commerce to a complete halt.

4 Tinkering with higher reservoir levels in
5 the upper basin lakes of the Missouri is like playing
6 roulette with river transportation. It invites
7 increased incidents of interruptions in river
8 traffic. Illinois is a key beneficiary of the water
9 transportation system because more than 45 percent of
10 our state's corn crop and over 50 percent of our
11 soybean crop are exported to customers overseas.

12 ICGA believes the spring rise approach
13 places undue consideration on upstream recreational
14 and environmental interests. It is my understanding
15 that the concepts of adaptive management has
16 insufficient scientific validation. How can we move
17 forward with such a plan without appropriate
18 conclusive data and scientific acceptance that this
19 route will lead to species recovery?

20 I am a farmer, not a scientist, but I do
21 know there are enough wildly varying opinions on the
22 potential benefits of a spring rise that it would be
23 ill-advised to move forward at this time. I find
24 myself asking why if this new theory of river
25 management is correct no one is asking us to apply it

1 to the upper reaches of the Missouri as well. Why
2 not remove the dams on the upper reaches of the
3 Missouri too.

4 Are we prepared to pull the plug on this
5 volume of customers based upon scientific theory?
6 Some supporters of the NAS study will try to tell you
7 they don't advocate the ending of the navigation or
8 the evacuation of the flood plain. ICGA believes
9 what is being proposed is a sure and certain recipe
10 to seriously curtail and possibly end navigation.
11 Restoration of the natural flood pulse, restoration
12 of natural low flows, restoring a meandering channel,
13 restoring cut and fill alluviations, restoring
14 natural riparian vegetation, increasing variations in
15 water temperature and removal of extensive bank
16 stabilization and stream channelization, and when
17 looked at in combination you have a big plan to kill
18 navigation, either innocently or contrived.

19 I could take up more of your time
20 discussing how many rail cars and semi trucks it
21 would take to move cargo currently moving on this
22 interdependent river system, or I could expound on
23 the increased traffic risks and road maintenance
24 costs associated with truck numbers, or I could point
25 out the increased air pollution related to all these

1 trucks, but I think you already know all of this.

2 In the final analysis it would be nice to
3 return our river to a completely natural state,
4 however, the American public decided decades ago that
5 the diverse benefits of river transportation when
6 managed wisely are too overpowering, too important to
7 our economy and too important to our future.

8 We have imperial data and practical
9 experience documenting the risk of flooding and the
10 potential financial losses resulting from reduced
11 internal drainage. The ICGA supports non-flow
12 species habitat restoration alternatives as a method
13 of addressing species concern, because reduced summer
14 flows would end navigation on the Missouri and
15 threaten barge traffic on the Mississippi River
16 system. The Current Water Control Plan in place seems
17 our best course. Thank you for your attention and
18 opportunity to testify.

19 COL. DAVID FASTABEND: Thank you, Mr.
20 Niemeyer.

21 MR. CIESLIK: Paul Rohde.

22 MR. ROHDE: Good evening, General, and thank
23 you for this opportunity to speak to you tonight.

24 My name is Paul Rohde. I am Vice President
25 of the Midwest Area River Coalition 2000, a public

1 advocacy coalition I'm sure you're familiar with, and
2 I won't go into any more detail on us, but we do
3 appreciate this Quincy hearing to receive testimony
4 from other constituencies who are just as adversely
5 affected by proposed changes on the Missouri River as
6 those directly along the Missouri. However, we
7 reiterate our concern that these hearings are being
8 held prior to the completion of the adequate
9 Mississippi River impact analysis. Consequently, we
10 support the National Academy of Science's
11 recommendation for a moratorium on any proposed
12 changes to the Missouri River Master Manual at this
13 time.

14 I didn't come here with Mr. Niemeyer, but I
15 would like to expand on this theme of
16 interdependence. Our rivers are an interdependent
17 system, and the fact that we are meeting here north
18 of the confluence of the Missouri and Mississippi
19 Rivers is in itself testament to the interconnection
20 of our rivers, and therefore, the interconnection of
21 its people here in the Midwest and for that matter,
22 even with those who live upriver, and with whom we
23 don't see eye to eye on the issue of the Missouri.

24 This debate has brought forth attempts to
25 minimize the Missouri as a navigable river and

1 downplay the navigation industry's role and the role
2 of related industries to the region. The benefits
3 enjoyed by waterway navigation cannot be viewed as
4 expendable during this process. Water compelled
5 rates from Missouri River navigation decrease
6 transportation costs for approximately the 38 million
7 tons moved by rail each year. The interconnected
8 capacity waterway navigation plays along with rail
9 and truck to transport the commodities that ensure
10 the midwest's economic viability cannot be
11 understated. The Missouri River is a vital economic
12 asset to the region's overall economy and especially
13 to the importance of the Upper Mississippi River
14 system ensuring the midwest's economic status as
15 America's third coast.

16 Regionwide, navigation affords industry and
17 agricultural producers and consumers 75 to 200
18 million dollars more in benefits by keeping rail and
19 truck rates competitive. Navigation on the
20 Mississippi is an industry that creates and supports
21 over 400,000 jobs to this region and transports over
22 an average of 100 million tons of commodities. Almost
23 70 percent of our agricultural exports travel this
24 river system supporting one of the positive balances
25 of trade in a time of economic uncertainty.

1 Navigation benefits are enjoyed by
2 everyone, all of us, consumers, through lower prices
3 for products, American workers, miners and farmers by
4 reducing their transportation costs, manufacturers
5 through lower raw material costs made available by
6 inexpensive transport and less expensive distribution
7 of products and to shippers. And that money saved
8 goes back to the community here where we live and
9 work, back to home and car purchases, to local stores
10 for groceries, gasoline, clothing and entertainment,
11 to healthcare and insurance, to employing full and
12 part-time help. For farmers it goes to equipment, to
13 feed stores, and of course, that money saved is also
14 returned in local, state and federal taxes.

15 Now as far as the Quincy area citizens are
16 concerned, any changes to the CWCP for an experiment
17 on the Missouri River is also an experiment on the
18 Mississippi River, and those who make their
19 livelihood here, both up and down the river of the
20 confluence. You cannot segment a river, despite the
21 NAS report's suggestion. Any action taken on one
22 portion will have effects on the entire river system
23 as a connected entity. Jeopardizing navigation on the
24 Missouri will have adverse effects on the
25 Mississippi. Effectively land locking the Upper

1 Mississippi region with lower water flows and higher
2 reservoir levels under all, but the CWCP proposals
3 will be a detriment to our economy, environment and
4 standards of living.

5 The elimination of Missouri River
6 navigation would also have detrimental effects to the
7 Mississippi River, both up and down river. By
8 jeopardizing the average of 100 million tons traveled
9 along the Upper Mississippi River system each year
10 with lower water flows and higher reservoir levels we
11 could be sentencing this region to almost four
12 million additional trucks on our region's highways.
13 You can imagine the negative environmental impact
14 this would have, not to mention the additional
15 construction and repairs, accidents and fatalities
16 that would ensue on already over-extended highways.
17 These impacts cannot be discounted when considering
18 all the effects of changes to the CWCP.

19 We would like to just say this recently
20 released report from the NAS confirmed the glaring
21 questions still left unanswered regarding solutions
22 to the challenges facing the Missouri River.
23 Certainly, human lives, not only livelihood, but the
24 possible threat to life itself, if these changes to
25 the Missouri River should be employed, should have a

1 higher priority over unknown and untested results
2 that may occur to the ecosystem.

3 Recreation is certainly an interconnected
4 entity to the river, and it deserves mention. The
5 Corps, however, values recreation according to a
6 different methodology than navigation resulting in
7 misleading statistics. We have made our points on
8 this at previous hearings, and my only addition to
9 that would be if the current water flow plan allowed
10 recreation to grow and prosper into an 85 million
11 dollar industry as the Corps purports then the CWCP
12 can't be all that bad.

13 MARC 2000 opposes five of the six
14 alternatives and believes that the CWCP provides the
15 best alternative to meet all Congressionally
16 authorized purposes, including navigation, flood
17 control, recreation, hydropower and fish and wildlife
18 needs.

19 To close, we respectfully call for a
20 moratorium on any revision and withdrawal of the
21 Service's Biological Opinion for review against the
22 documentation provided by the NAS. Thank you.

23 COL. DAVID FASTABEND: Thank you, Mr.
24 Rohde.

25 MR. CIESLIK: Shawn Valter.

1 MR. VALTER: I am Shawn Valter from Quincy,
2 Illinois, and I'm the manager of the Adams County
3 Farm Bureau. We are an agricultural association
4 representing 1,600 farm families here in and around
5 the Quincy area. These farm families depend greatly
6 on the river system out here to export their locally
7 grown commodities to the world markets.

8 The proposed changes to the Current Water
9 Control Plan for the Missouri River could have a
10 severe negative impact on our already financially
11 burdened farm families. In times of drought, lower
12 summer flows would limit navigation, essentially
13 stopping the barge traffic on the Mississippi River.

14 The Farm Bureau is also concerned with
15 adaptive management practices, which would create too
16 much freedom for the Corps to adjust flow management
17 without any significant input from the public.

18 We appreciate the opportunity to comment on
19 this issue and oppose any revision that would be
20 detrimental to our farm families. We are in support
21 of the Current Water Control Plan for the Missouri
22 River. Thank you.

23 COL. DAVID FASTABEND: Thank you, Mr.
24 Valter.

25 MR. CIESLIK: Ed VanderMeulen.

1 MR. VANDERMEULEN: Good evening. My name is
2 Ed VanderMeulen. I am from Morrison, Illinois, and I
3 am the Area Distribution Manager for the River Region
4 of Lafarge North America.

5 Lafarge North America is a leading producer
6 of building materials in our country. We are
7 dedicated to providing the very best products and
8 services to build our country, and we are strongly
9 committed to our environment. We transport millions
10 of tons annually on the United States inland waterway
11 system. We have numerous plants and distribution
12 terminals on the rivers. Our employees live and work
13 in riverfront communities. The water that's sustains
14 our lives comes from our rivers.

15 The Missouri River is very important to
16 us. We have a cement plant at Sugar Creek, Missouri
17 and a distribution terminal in Omaha, Nebraska. The
18 river is a natural and an environmentally preferable
19 supply line from our plant to our terminal, one we
20 have used responsibly for the last 36 years. Our
21 manufacturing processes particularly at Sugar Creek
22 require a variety of bulk materials and fuel which
23 are transported in the most efficient and
24 environmentally responsible manner on the rivers. We
25 have invested substantially at this plant and in our

1 specialized barge fleet to increase our abilities to
2 supply building materials into the upper Midwest.
3 Lafarge North America has the need to transport
4 annually approximately half a million tons on the
5 Missouri River, bringing in materials and fuel and
6 moving finished products to the market. We can only
7 do so if the river is navigable on a consistent
8 basis.

9 River transportation allows us to produce
10 and sell our products competitively. River
11 transportation keeps costs down for everybody. It
12 provides a competitive balance with other modes of
13 transportation. It's good business, and it's good
14 for the consumer. As such, it is beneficial to all
15 of us. But even more importantly, please consider
16 that a gallon of fuel moves one ton, 514 miles by
17 barge, 202 miles in a rail car and 59 miles by
18 truck. And as we have heard many times, a barge
19 hauls the same as 15 rail cars or 58 semi-trailer
20 trucks. For every ton we must haul by truck we must
21 use 826 percent more fuel, and exhaust emissions
22 increase by 709 percent, and we contribute to the
23 national dilemma of truck tire disposal and vehicular
24 accidents. River transportation is good for the
25 environment in a very substantial way.

1 These benefits are not limited to the
2 Missouri River Basin. The lower Mississippi River,
3 the main stem if you will, of the Ohio River, the
4 Upper Mississippi, the Missouri and the Illinois and
5 all their navigable tributaries receives a
6 substantial amount of its flow from the Missouri.
7 Without that flow the effects spread over a wider
8 area. From Pennsylvania, Minnesota and South Dakota
9 to the Gulf of Mexico higher costs, elimination or
10 reduction of commerce, more fuel and more pollution,
11 and yes, more truck tires.

12 A fractured navigation system on the
13 Missouri damages, if not eliminates, the economic
14 viability of this valuable resource while resulting
15 in predictable and undesirable environmental
16 impacts. Lafarge North America strongly supports the
17 Current Water Control Plan for the operation of the
18 Missouri River. Thank you.

19 COL. DAVID FASTABEND: Thank you, Mr.
20 VanderMeulen. I never heard those statistics
21 before. Those are interesting.

22 MR. CIESLIK: Bill Lay.

23 COL. DAVID FASTABEND: Mr. Lay, did you
24 turn your card in late or is my staff doing this to
25 you?

1 MR. LAY: No. No, sir, I turned it in a
2 little late. General, I'm sorry. My name is Bill
3 Lay. I farm near Fayette, Missouri, and I'm a member
4 of the Missouri Levee and Drainage District
5 Association.

6 I want to thank your staff for the way they
7 have handled these hearings and this study. Not only
8 have they answered my -- been available for my phone
9 calls, taken time to discuss matters with me, but
10 they have placed on the web so we can unload them the
11 flows from which Roy McAllister has made his charts
12 so I can question him about his charts and the
13 biological opinion that was made by the Fish and
14 Wildlife, as long as the Fish and Wildlife keeps
15 their website up, but I understand it's now back on,
16 and the transcripts of the public hearings, and of
17 course finally, the report of the science group that
18 just came out.

19 I would like to address first the opinion
20 of the Fish and Wildlife since that is the basic
21 documents which we are addressing here. They sent
22 this opinion to various experts to examine. Dr. Paul
23 Hurdland of Utah stated in his letter the life
24 history needs of the pallid sturgeon appear to be
25 poorly understood, and then he said a generally

1 accepted relationship is based upon little data. He
2 states the biologists still don't know what the key
3 habitats of the pallid sturgeon are, and in
4 discussing spawning cues, the only citation on the
5 spawning cues was merely a review paper or more a
6 review paper than actual research and that many
7 biologists thought that the Colorado Pike Minnow also
8 needed high flows to cue spawning, but we have found
9 that they spawn even in years with no spring flows,,
10 suggesting that cueing may not be all that
11 important.

12 David Galliant, who is with the University
13 of Missouri, stated in his letter there is a great
14 deficiency in scientific knowledge of flow and
15 habitat requirements for the pallid sturgeon, and
16 then he also states detailed environmental
17 requirements of the multiple listed species are
18 poorly known. Then Ken Labinski of the Upper Midwest
19 Environmental Services Center stated, "I am not aware
20 of any quantitative or qualitative relationship
21 between flows and habitat quality on the Missouri
22 River."

23 The question implies that a single
24 universal relationship exists between discharge and
25 habitat quality. I will not expect habitat quality

1 to vary with discharge in the same way everywhere on
2 the Missouri River system. Likewise, habitat quality
3 will not be the same for different habitat types and
4 the same segment of river for a single discharge.

5 For example, flood flows in the lower
6 Yellowstone will produce large areas of fast, deep
7 water as well as extensive areas of standing back
8 water, and flooded areas comparable flows in a
9 segment downstream from Sioux City will probably only
10 produce extensive areas of fast, deep water.

11 So I think -- and I have another quote from
12 Kenneth Labinski of the United States Geologic
13 Service, and he states, "There are many unknown
14 uncertainties involved in the primary question", and
15 then he lists four or five of those uncertainties.
16 Now why then are we doing this? Okay. Thank you. I
17 have to end.

18 COL. DAVID FASTABEND: All right, Mr. Lay.
19 Remember, if you have material, you can send it to my
20 office, and we will review it. Does anyone else want
21 to make a comment? Okay.

22 Mr. Bilderback, I would be glad to talk to
23 you some more after the meeting to hear about your
24 issues you brought up.

25 In closing, I would like to remind you that

1 the hearing administrative record will be open
2 through 28 February 2002 for anyone wishing to submit
3 written, fax or electronic comments. Also, if you
4 want to be on the mailing list or receive a copy of
5 the transcript, you need to fill out one of the cards
6 available at the table by the entrance.

7 Ladies and gentlemen, I thank you for being
8 here tonight and providing us with valuable
9 information, which I can assure you will be
10 considered in making a decision on the Master Manual
11 process and plan. Thank you very much.

12 (END OF PROCEEDINGS)

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1 STATE OF ILLINOIS)
) SS
2 COUNTY OF ADAMS)

3

4

5 C E R T I F I C A T E

6

7 I, Kathy A. Genenbacher, CSR, a Notary
8 Public in and for the County of Adams, State of
9 Illinois, do hereby certify that heretofore, to-wit,
10 the above proceedings were reported stenographically
11 by me on the 23rd day of January, A.D., 2002, at the
12 hour of 7:00 P.M., at the Quincy Holiday Inn, 201
13 South Third Street, in the City of Quincy, County of
14 Adams, State of Illinois.

15 In testimony thereof, I have hereunto set
16 my hand and affixed my notarial seal this 30th day of
17 January, A.D., 2002.

18

19

20

21

Notary Public

22

Certified Shorthand Reporter

23

24 My Commission Expires

25 June 28, 2001

**PUBLIC COMMENT
U.S. ARMY CORPS OF ENGINEERS
MISSOURI RIVER MASTER MANUAL RDEIS HEARING
MICHAEL D. WELLS, CHIEF OF WATER RESOURCES
STATE OF MISSOURI
QUINCY, ILLINOIS—JANUARY 23, 2002**

Good evening, my name is Mike Wells. I am Chief of Water Resources for the State of Missouri. Thank you for allowing me an opportunity to present additional testimony on this most important issue to the State of Missouri. On Monday night of this week D. K. Hirner, Deputy Chief of Staff for Governor Bob Holden, presented comments for the Governor at the public hearing in Cape Girardeau, Missouri. I will take this opportunity to provide additional information in support of the Governor's testimony.

One of the points in Governor Holden's comments was his opposition to the proposed reductions of downstream flows. In support of the Governor's position and for the public record I am submitting two schematic drawings which clearly demonstrate how all five of the new plans will shift water to the upper basin reservoirs by setting triggers for reducing service to downstream users significantly higher than the current plan. These higher triggers will significantly increase the frequency in which flow support for downstream uses will be reduced. These triggers must be drastically lowered in order to honor the Federal Government's commitment to protect Mississippi River commerce and to maintain it as a reliable and cost effective transportation mode.

In the Governor's comments, he also expressed his displeasure that the impacts the five new plans would have on Mississippi River navigation have not been thoroughly analyzed and displayed in the RDEIS for public review. As an example of the adverse impacts, I have attached two graphs showing how Mississippi River navigation would have been impacted the past two years had the Modified Conservation Plan (MCP) been in operation. Unfortunately for Mississippi River interests, the Modified Conservation Plan is imbedded in all five of the new plans under consideration.

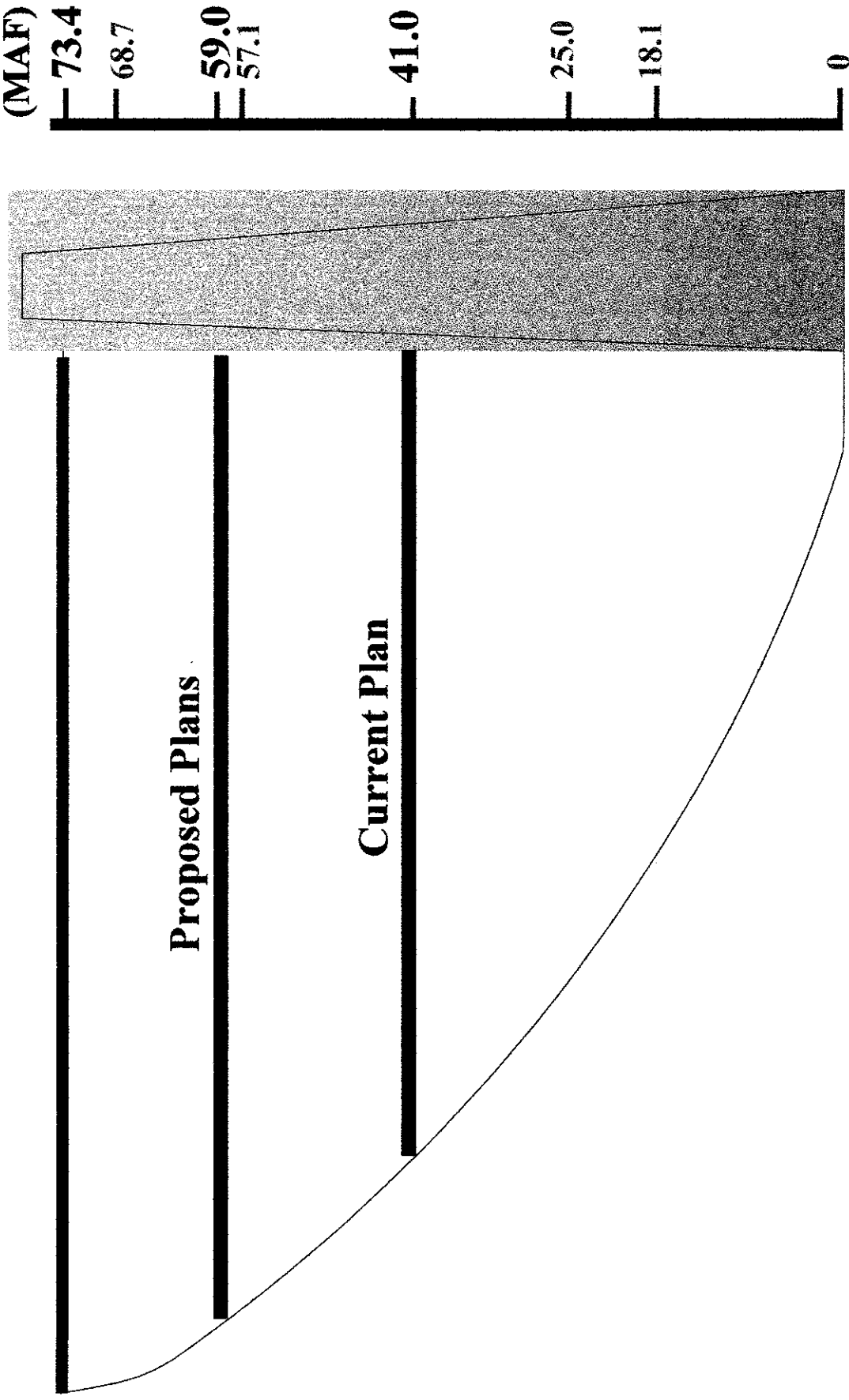
In addition, Missouri is committed to improving the environmental health of the Missouri River while ensuring the economic security of its citizens.

Although there have been some successful habitat restoration projects on the Missouri River, there are many additional opportunities to greatly expand these efforts. The St. Louis District has over 20 years of experience in the use of environmental river engineering to create and improve fish and wildlife habitat on the Mississippi River without implementing flow alterations. Governor Holden has encouraged the Northwest Division to consider implementing habitat restoration projects similar to those undertaken by the Corps' St. Louis District along the Mississippi River. These projects have proven to be tremendously effective. The Governor requests that these same engineering techniques be used on the Missouri River to restore habitat. I am submitting for the record the most recent copy of the St. Louis District's handbook entitled "*Environmental River Engineering on the Mississippi*".

Thank you again for the opportunity to comment.

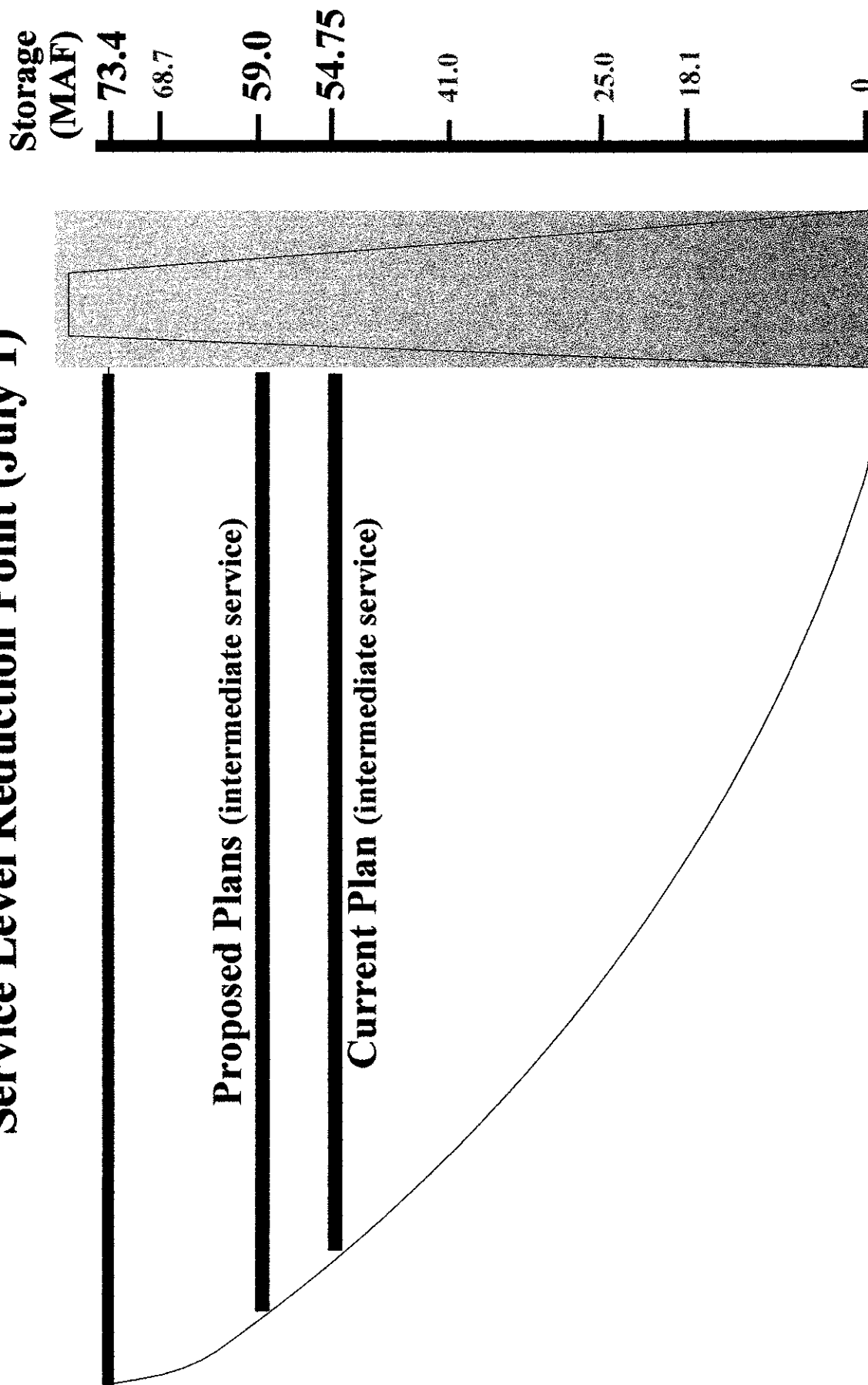
Missouri River Main Stem Reservoirs

Season Length Cutoff Point

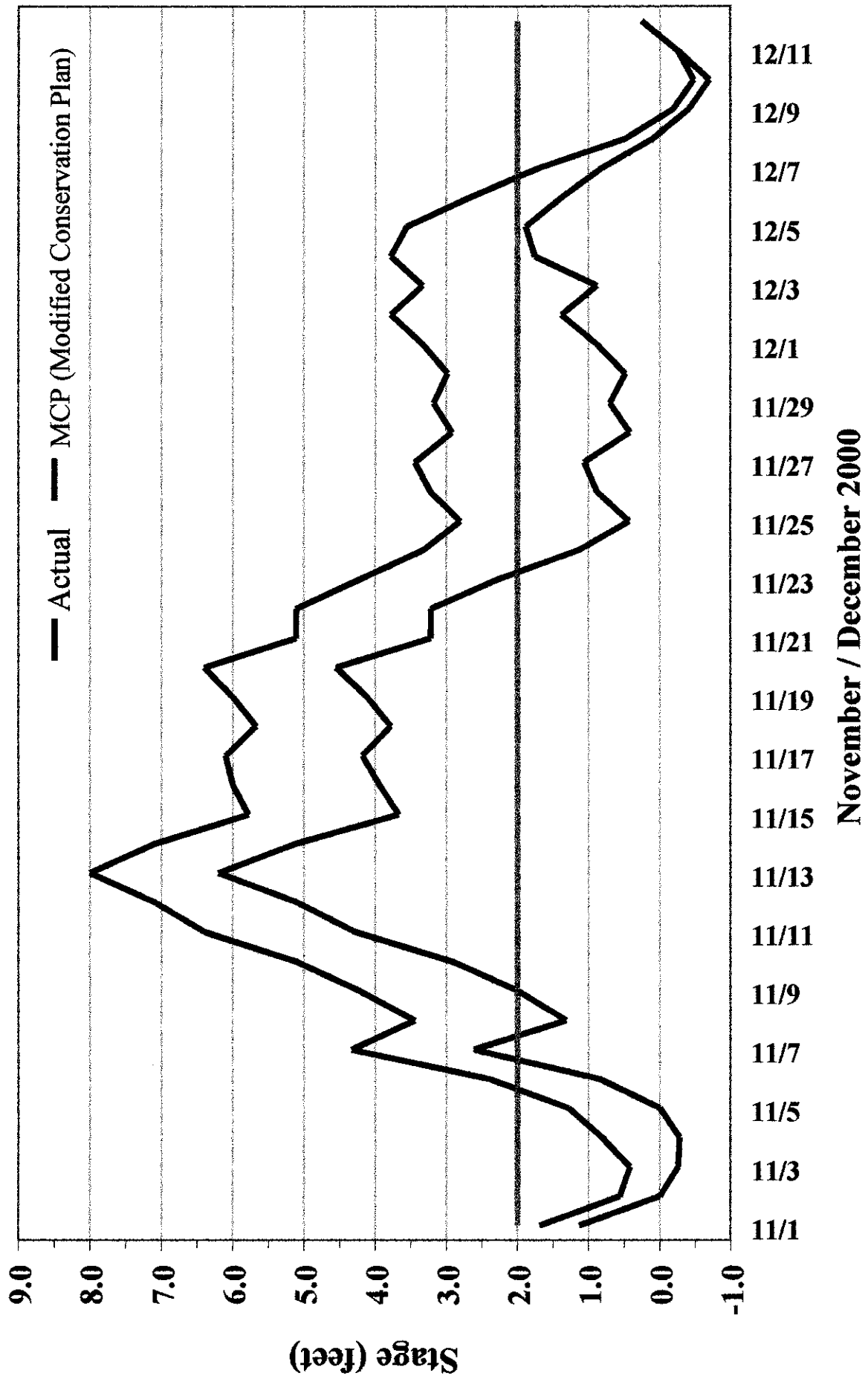


Missouri River Main Stem Reservoirs

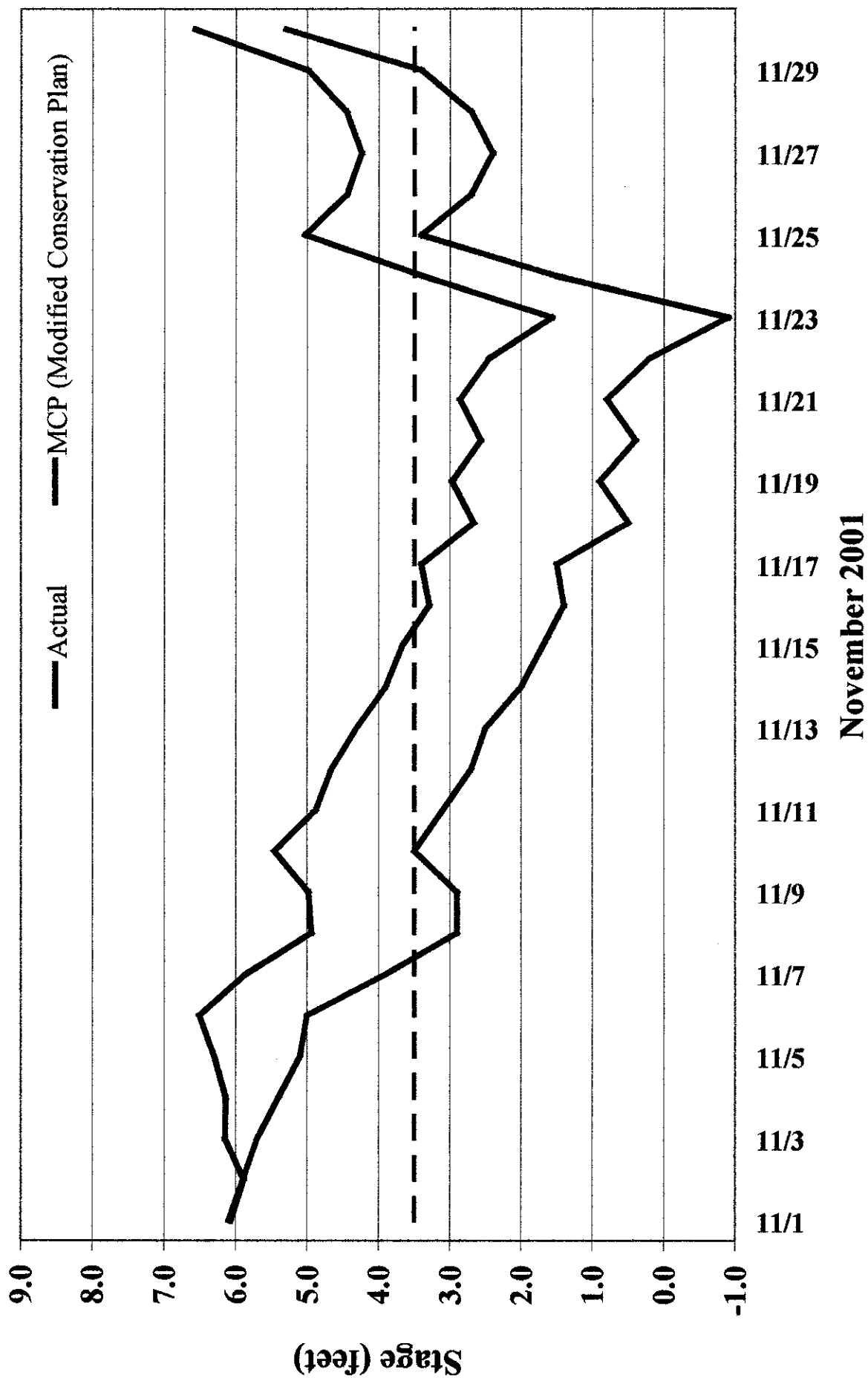
Service Level Reduction Point (July 1)



November / December 2000 Stage Comparison Mississippi River at St. Louis, Missouri



November 2001 Stage Comparison Mississippi River at St. Louis, Missouri



Oral Testimony: Public Hearing
Revised Draft Environmental Impact Statement
Missouri River Master Water Control Manual
United States Army Corps of Engineers
Northwest Division

Good evening. My name is Frank Becker. I am an agricultural producer in Bowling Green, MO. I, with my brother produce corn, soybeans, wheat, cattle and hogs on 2000 acres. I am here tonight representing the Missouri Corn Growers Association. I am on the MCGA Board of Directors and serve as Vice President . MCGA is a grassroots organization representing corn growers across Missouri.

MCGA will support the current water control plan because it is the only feasible alternative presented by the Corps of Engineers. All the other alternatives that are being presented would be absolutely devastating for agriculture.

We are opposed to what is referred to as the "spring rise". First, increasing water releases would flood or decrease drainage on thousands of acres in the Missouri River bottoms. This proposed "controlled flood" could be devastating not only for potential massive flooding but also delayed plantings due to internal drainage problems.

It is also proposed that these increased spring flows would be offset in the late summer by a split navigation season. During July through September,

water releases would fall below levels needed to maintain navigation. This would end navigation on the Missouri River.

Now we come to why a farmer on the Mississippi River is interested in the Missouri River. As you know, barges are a low cost transportation alternative for agricultural commodities and inputs. The Missouri and Mississippi Rivers are a river system. The barge transportation is a system that requires that both the Missouri River and Mississippi River be maintained and supported as a system. The Missouri River is also a major source of water for the Mississippi River. During the drought of 1988, Missouri River discharges accounted for 63% , thats almost 2/3, of the water flowing past St. Louis from July through October. If planned flow reductions by the Corps would coincide with another summer drought, navigation on the Upper Mississippi would be interrupted, costing the Nation's farmers and industries millions of dollars a day. Navigation on the River system supports more than 400,000 jobs and over \$1.5 billion of corn is shipped down the river on barges. Farmers depend on river transportation for their livelihood and the U.S. depends on us for exports and trade.

Barge transportation place competitive pressure on regional rail rates. It has been demonstrated numerous times that in areas throughout the country that do not have access to barge transportation, rail rates are higher. In your, the Corps analysis, it's estimated that barge competition reduces rail rates in the Missouri Basin by up to \$200 million annually. The importance of barge competition is further heightened as the rail industry continues to consolidate.

We also have concerns about what the Corps calls "adaptive management". Through this proposed adaptive management, the Corps would be given considerable power to make flow release adjustments. These adjustments would be made primarily through consideration of one interest, the endangered species. If it is determined by the government agencies that for the sake of the species it is needed, the highest spring rise and lowest summer flows could be implemented. We cannot assume that any other alternative would be proposed and accepted by the Fish and Wildlife Service. They have single mindedly always proposed a spring rise and split navigation season as the *only* alternative that would benefit the species. They have not proposed any other reasonable and prudent alternative.

MCGA is concerned that adaptive management will result in the loss of the public's ability to be involved in the decisions involving flow management for the Missouri River. It does not follow the law which is provided by the National Environmental Protection Act (NEPA) which allows for public input. Through adaptive management, the Corps assumes power not given to it by Congress. Congress did not intend for the Corps to assume the power to implement any changes they feel are necessary or want to try as an experiment.

In summary, a spring rise is unwarranted and unscientific. It threatens farms and towns with increased risks of flooding and financial losses through reduced internal drainage. The reduced summer flows would end navigation on the Missouri and threaten barge traffic on the Mississippi river.

Thus, MCGA supports the current water control plan. Another way to put it is: IT AIN'T BROKE SO WAY ARE WE TRYING TO FIX IT:



"Improve the economic well-being of agriculture and enrich the quality of farm family life."

Comments on Behalf of the Illinois Farm Bureau®

Re: Missouri Master Water Control Manual

January 23, 2002 -- Quincy, Illinois

Good evening. My name is Kevin Rund. I am Director of Local Government and Transportation Specialist for the Illinois Farm Bureau, our state's largest general farm organization with over 350,000 members.

Illinois Farm Bureau opposes the flow changes now being considered. We are not simply opposed to change, but with the exception of the current master plan, none of the options proposed are acceptable.

Our policy supports:

"Efforts to come to a mutually acceptable revision to the Missouri River Master Water Control Manual while protecting against proposals that would regulate the river's flow to the detriment of the waterway navigation system."

"We will urge the Corps of Engineers to adopt water flow management policies that avoid the flooding of farmland situated below any reservoir or dam managed by the Corps."

Because this evening's emphasis is focused on impacts to the Mississippi River, I'll highlight only two key reasons for our opposition to the current proposals for change.

#1) The changes proposed on the Missouri would cause negative impacts in Illinois.

Being on the eastern side of the Mississippi, not many of our members would be directly affected by the flooding caused by the proposed spring rise. But, every one of our members would be impacted by the summer low flows and split navigation season being considered. And that goes for all the other Upper Mississippi River states.



ILLINOIS AGRICULTURAL ASSOCIATION®

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Disrupting navigation on the Missouri would cause ripple effects throughout the region and across modes of transportation. We'd feel the bite in Illinois and it would come in the form of higher transportation costs due to lowered competition. It would come in the form of worsened air pollution because of more trucks and trains operating in what is already a non-attainment area. And in dry years, it would come in the form of lost jobs, wages, income and tax revenue because of inefficient navigation on the Mississippi.

The Corps has to look beyond the Missouri basin to measure the full impact of these proposals to change the manual.

#2) Experimentation should be contained, not pervasive.

The National Academy of Science made it clear—mimicking natural flows in the Missouri River would not guarantee recovery of the three species in question. It would require experimentation to learn how effective that approach might be. But that experimentation should be conducted on a limited scale in controlled settings. It would cost less to create hundreds of acres of habitat that could be studied than would be the cost forced on area residents and economies through system-wide experimentation.

The "Adaptive Management" approach included among these proposals would be experimentation on a massive scale, with the Missouri basin the petrie dish. It is a trial-and-error approach that risks peoples' well-being and livelihoods. If done here, we're concerned where the Corps might apply that approach next? It would not be acceptable in Illinois and we support our counterparts across the Mississippi in saying that it is not acceptable in Missouri.

There are smaller scale approaches to experimentation that would risk far less. The Corps should look to those first.

In conclusion, I want to commend the Corps for its persistence in attempting to find a balance among the myriad of interests in the Missouri basin. I do urge you to not adopt measures that would increase flooding or reduce the efficiency of navigation on either the Missouri or Mississippi Rivers. Instead, for now, continue operating under the Current Water Control Plan.

Thank you for listening.

UPPER MISSISSIPPI, ILLINOIS & MISSOURI RIVERS ASSOCIATION

Affiliate Members
Illinois Valley Flood
Control Association
Missouri Levee and
Drainage District
Association

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January 23, 2002

Rock Island District
Corps of Engineers
P O Box 2004
Clock Tower Building
Rock Island, IL 6104-2002

RE: Public Meeting January 23, 2002
Missouri River Master Manual Public Meeting

Gentlemen:

Thank you for the Public Meeting. The tri-state area of Southeast Iowa, Northeast Missouri, and West Central Illinois is very concerned about the proposed changes to the Missouri River Master Manual. I am Mike Klingner, vice chairman of the Upper Mississippi River, Illinois, and Missouri Rivers Association (UMIMRA), and chairman of the Great River Economic Development Foundation (GREDF).

The River network of the Illinois, Missouri, and Mississippi Rivers are extremely important for the economic well being of our region. We are an agriculturally based economy, essential for the Nation. The most cost-effective and environmentally benign mode of transportation of bulk goods is by barge. During dry weather conditions, the Missouri River provides up to two-thirds of the flow in the Mississippi between St. Louis and Cairo. Any Missouri River change that damages navigation is unacceptable. An essential criterion of change should be to improve all the basic needs of the river—Navigation, Flood Control, and the Environment.


Instead of experimenting with a pallid sturgeon viagra, also known as a flood pulse, the Corp should focus on the basics—reliable navigation, realistic environmental improvements, and adequate flood control. Any change that hurts the basics should not be considered.

We respectfully request maintaining the Current Water Control Plan (CWCP). Over the next few years, the Corp will be involved in Comprehensive Planning for the Illinois and Mississippi River. During planning efforts it would be possible to continue research on side channel simulated flood pulses, off-channel simulated environments, or other environmental studies. The long-range goal of the CWCP should be development of a system where economic and environmental solutions coexist. Before any change is made to the management of the Missouri River, a Missouri River Comprehensive Plan should be completed. UMIMRA and GREDF are here to assist the Corp of Engineers to obtain authorization and appropriations in these efforts.

Thank you.

Very truly yours,

UPPER MISSISSIPPI, ILLINOIS & MISSOURI RIVERS ASSOCIATION


Michael D. Klingner, P.E.
Vice-Chairman

**Oral Testimony:
Lynn M. Muench
The American Waterways Operators**

**Missouri River RDEIS Public Hearing
Quincy, Illinois
January 23, 2002**

My name is Lynn Muench and I am Vice President of the Midcontinent office of The American Waterways Operators. AWO represents the towboat and barge operators on our coastal and inland waterways system, including on the Missouri, Mississippi, and Illinois Rivers. Today, I'm here to articulate our industry's concerns with the alternatives presented in the RDEIS and our vision of the future.

The construction of the dams on the Missouri River and the locks and dams on the Mississippi River were begun in the 1930s. Congress mandated 9-foot channels to move agricultural products, in a cost-effective manner, from the landlocked Midwest to the coasts and to export markets. Before these rivers became a reliable "third coast," farmers were held hostage to high rail rates. Farm income was often devastated by these high rates. With the construction of the water superhighway, low-cost transportation became available and rail was forced to compete for business. This phenomenon,

otherwise known as "water-compelled rates", saves shippers in the region ⁹⁰⁰ ~~between 75-200~~ million dollars per year in decreased rail and truck rates when forced to compete ~~in the Missouri basin alone~~. The towboat industry is dismayed that these numbers are not proportionally evaluated for the immediate and real regional economic benefits or costs. We call on the Corps to correct their methodology to fully reflect the economic hardship the region will face without river navigation.

Missouri River flow changes would impact the quality of life in the upper Mississippi Basin. The impacts on the upper Mississippi River are either unknown at this time or grossly underestimated in the RDEIS. The Corps has either not evaluated, considered, or released information on the following:

1. According to the Missouri Department of Natural Resources, split-navigation, otherwise known as low summer flows, would render the Mississippi River unreliable in at least 27 out of 100 years. How will this impact the upper Mississippi's economy and the American

farmer? Will agricultural exports still be able to be competitive in the world market? Are we ready to put the 900 million dollars in savings to shippers, including farmers, due to water-compelled rates in jeopardy on an annual basis?

2. The "spring-rise," otherwise known as a "planned" spring flood, would vacillate, in a short period of time, the water levels in the St. Louis Harbor. There is no evaluation in the RDEIS of how fast the St. Louis Corps District could dredge the harbor. How much delay will this cause shippers? Why are shippers' increased costs not included in economic costs?
3. The Corps did not take into account the effect of water depletions in the upper Missouri basin; therefore, all the data in the RDEIS on water available for flows to support navigation is incorrect. These depletions will negatively impact the reliability of navigation on the Mississippi River.

4. The loss of jobs in auxiliary businesses such as shippers, terminals, and ports was not evaluated in the RDEIS. Ripple-effect job loss was also not considered.

The model to evaluate economic impacts is extremely narrow and grossly underestimates the negative impact to the Missouri and Mississippi basins. AWO requests that the Corps reevaluate their economic analysis. The study must reflect the true impacts to the entire nation including the upper Mississippi River basin.

The waterways industry provides the nation with the safest, most environmentally friendly, and cost-effective form of transportation. While others have talked about the environment and improving lives, AWO members have taken concrete actions like its required Responsible Carrier Program to protect the river environment, our air, and the safety of our employees and citizens. All proposals, except the CWCP, will have negative environmental effects that have not been evaluated. What species will be negatively affected by these proposals? Will there be an increase in sedimentation that will affect water quality? How much will it cost our

communities for air pollution cleanup if the Missouri and Mississippi are both rendered unreliable and modal shifts occur? How many lives will be lost if product must move off the water and onto the roads or rail? None of these issues are evaluated in the study. If the RDEIS is to represent true national impacts, they must be. Without this information, AWO members strongly urge the Corps to choose CWCP as its preferred alternative and work to create habitat for threatened and endangered species in a way that does not endanger America's economic prosperity, the American farmer and the environment.

Last, I'd like to make a few brief comments on the recently released NAS study.

1. NAS indicates that introduction of nonnative species is one of the key reasons for the decline in native species. Eliminating USF&WS and state hatcheries^{annual introduction} of nonnative fish could be a first step to eliminate this problem without manipulating flows.
2. NAS suggests the river should be managed in segments. It is impossible to segment the river below Gavin's Point without building more dams. This is not logical or practical.

3. NAS, although not tasked to do so, commented that the 1950's traffic projections for the Missouri River were overestimated. This is not true. Traffic was well on ^{track to reach or exceed} ~~its way of reaching~~ expectations before the Corps changed the rules in the 1980s. Since ^{that time} ~~1982~~, business on the river has moved from 5-year contracts to spot basis and docks and terminals have been disinvested. Why would any sane business invest in a transportation system with its future so unpredictable? The adoption of CWCP could positively impact ^{future} investment and traffic.

I'd like to thank the Corps for this opportunity. How we decide to balance the multiple uses of this important national treasure will indicate how much we, as a nation, value economic prosperity, the health of the family farm, and our environment. **In summary, AWO remains strongly opposed to any change in Missouri River reservoir operations that will jeopardize Missouri River or mid-Mississippi River navigation and its economic benefits to the region and nation.**

USACE Public Hearing Quincy, IL

January 23, 2002

Welcome to the Upper Mississippi River. Thank you for adding this hearing to your schedule. We appreciate the opportunity to comment on proposed revisions to the Missouri River Master Water Control Manual.

Our Association, UMIMRA, is comprised of members along these three rivers. Our members are drainage districts, communities, businesses, associations and individuals. We wish to see improved flood control, navigation, recreational, economic development, and environmental conditions on each of these three important components of our national infrastructure. We have previously submitted written comments on the proposed revisions and have had representatives at a series of these meetings.

We do not believe that dismantling our river valley infrastructure is a valid goal nor is it a valid guiding philosophy for any management change. The rest of the world is improving their river infrastructure while we seem content to allow our system to merely meet the needs of the 1930s and 40s. In fact without continued maintenance it will not even continue to meet the needs of that long past era.

We believe the proposed changes in the operating manual would be a great disservice to Middle America and a great disservice to the nation. As President Bush recently suggested, the river system is the spine of the nation. We all know a bad back does not help us get our work done. Whether we look at the comparison literally or figuratively, a weak spine is debilitating.

Administrative rules that affect people, quite often create a situation where not all will be happy or well served by the results. In this case, however, we have a set of operating procedures in place for many years that have worked well, and, for the most part, have achieved the original intended results. Implementation of the proposed changes to this system in the proposed manner will only serve to weaken the system. It will hurt communities, individuals, and political units and will cost great sums in loss of property values, productivity and governmental costs.

Navigation is an enabler for growth, an improved standard of living and jobs. Where we have modernized the system, growth has been good. The Ohio River, the lower Mississippi River and elsewhere reflect that growth. That growth has been broad based. We need to improve the system rather than limit or destroy it.

Flood control is an enabler of growth, an improved standard of living and jobs. Where we have modernized the system, growth has been good. That growth has been broad based. We need to improve the system rather than ignore or severely weaken it. Additional spring releases will threaten the river valley from Gavins Point to Cairo and possibly beyond.

Improved recreation is an enabler for growth. It is the result of an improved standard of living and jobs. Where we have modernized the facilities growth has been good.

We believe that environmental stewardship is an important component in developing these plans. We do not believe that restricting those conditions to the 1800s or any other static time is a proper goal.

We respect the idea of adaptive management in the sense that science, and our knowledge of how to utilize it does change. Adaptive management based upon speculation is not valid. We do not believe that adaptive management under the control of the current interpretation of the Endangered Species Act is valid. When any specie, and I repeat any specie, has more rights and protection under the law than a human, or a human's habitat, we do not have a system that will allow an adaptive management system to work correctly.

The above comments apply to the entire river system, the Missouri, Mississippi and Illinois. You have been advised of the various problems that will be exacerbated by any changes in the Master Manual. We only wish to note that we are in agreement with the concerns expressed by the Missouri constituency. We believe you are contemplating a huge increase in risk, and cost to many for a few acres of "possibly" improved habitat. We believe you are also putting at risk business development along the upper Mississippi River and the Illinois River by increasing the magnitude of spring floods, jeopardizing navigation due to more frequent restricted summer flows, and minimizing the impact of potential future depletions.

The study seems to disregard or minimize those known results for the sake of several possibilities and unknown results. We do not support "testing hypotheses and exploring promising changes" on the backs of people, their businesses and communities.

We do not believe the suggested alternatives serve the original Missouri River project's purpose. We do not believe the alternatives proposed are valid. We request that the current Missouri River Master Manual be retained.

Thank you for your time and consideration.

David McMurray, Chairman
Upper Mississippi, Illinois & Missouri Rivers Association

March 22, 2001

The President
The White House
Washington, D.C. 20500

Dear Mr. President:

As governors of states along the Mississippi River, we are writing to express our concern about management changes proposed for the Missouri River. Major changes are being considered without documentation of their full effects or input from the impacted states outside the Missouri River Basin. The Missouri River flows into the Mississippi River immediately upstream of the second largest inland port in our nation - St. Louis. The stretch of the Mississippi River between St. Louis, Missouri and Cairo, Illinois is often referred to as the "bottleneck reach" because of the need for flow support to provide for transportation needs. During periods of low flow in the Mississippi River, the Missouri River provides as much as two-thirds of the water to the "bottleneck reach" of the Mississippi River supporting navigation and other beneficial uses of the river.

The U.S. Army Corps of Engineers is preparing a new plan for the operations of the Missouri River. The proposals under serious consideration include higher reservoir levels that would actually decrease flexibility in managing this complex system for flood control and other project purposes. The Corps' Northwest Division's "Preferred Alternative" would shorten the navigation season on the Missouri River by 27 days and reduce the reliability of navigation on the Mississippi River during a critical period in the late fall. An analysis of the last 100 years of records shows that, under this alternative, fall cutbacks would have occurred in 35 out of 100 years. This is over four times more often than under the current water management plan. In addition, six years would have had no navigation season compared with one under the current plan. Had this proposal been in effect during the year 2000, water levels at St. Louis and in the "bottleneck reach" of the Mississippi River would have been two to three feet lower for a period of 27 days in November. The other proposals being discussed vary slightly in detail, but would result in similar impacts.

Depletions of water from the Missouri River continue to increase as demands for water grow. These depletions increase the adverse impacts of the alternative on downstream reaches of the Missouri River and the Mississippi River. Depletions exacerbate the situation by increasing the frequency of shortened navigation seasons and years with no navigation. By lowering the total amount of water in the Missouri River reservoir system, these depletions would reduce

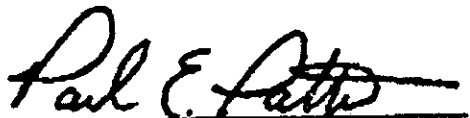
releases from the reservoirs, particularly during low precipitation. These years are often the same years that the Missouri River provides critical flow support to the "bottleneck reach".

The effects of the alternative and increased depletions greatly amplify the impacts of either one considered in isolation. They would prove harmful to Midwest agriculture, the ports from St. Paul to New Orleans and industries that rely on the Mississippi River to move their products and represent a serious blow to our nation's economy.

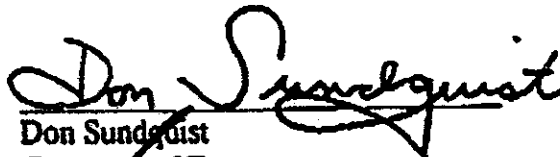
In addition to these considerations, the U. S. Fish and Wildlife Service has proposed an increased spring rise and a period of low flow in the summer to help three endangered and threatened species. If implemented, this would further exacerbate the effects of higher reservoirs and depletions. We support addressing endangered species issues in a reasonable manner that considers all environmental and economic issues. Substantial gains have been realized for the same species on the lower Mississippi River using creative habitat restoration without any change in river flow. This approach has succeeded without the disruption of normal river operations.

We urge you to ensure that decisions are reached on the operations on the Missouri River only with the direct involvement of all those states that rely on the Inland Waterway System. It is important that the Corps offer a briefing to all the Mississippi River states on the full effects of these proposals, including reasonably anticipated future depletions. We request that you direct the Corps to analyze the effects of the Fish and Wildlife Service proposals and reasonably anticipated depletions on the entire Mississippi River system and the compounded effects of these changes on the Corps' "Preferred Alternative". The Corps should not select its "Preferred Alternative" until these analyses and briefings have been completed and the states have been allowed time for meaningful input. Finally, we urge you to form an inter-agency group, including the Secretaries of Transportation and Agriculture, to review the implications of these proposals prior to implementation.

Respectfully,



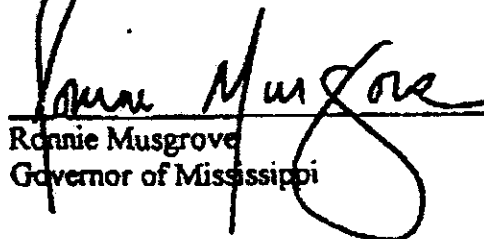
Paul E. Patton
Governor of Kentucky



Don Sundquist
Governor of Tennessee




M.J. "Mike" Foster, Jr.
Governor of Louisiana




Ronnie Musgrove
Governor of Mississippi


George H. Ryan
Governor of Illinois


Bob Holden
Governor of Missouri


Mike Huckabee
Governor of Arkansas


Scott McCallum
Governor of Wisconsin


Jesse Ventura
Governor of Minnesota

cc: The Vice President
The Honorable Donald H. Rumsfeld, Secretary of Defense
The Honorable Gale Norton, Secretary of the Interior
The Honorable Ann Veneman, Secretary of Agriculture
The Honorable Norman Mineta, Secretary of Transportation

Oral testimony
Public Hearing Testimony
Revised Draft Environmental Impact Statement
Missouri River Master Water Control Manual
United States Army Corps of Engineers
Northwest Division

by **Garry Niemeyer, President**
Illinois Corn Growers Association

Good morning/afternoon. I appreciate the opportunity to testify today on behalf of the Illinois Corn Growers Association. My name is Garry Niemeyer. I raise corn and soybeans in Glenarm, Illinois and I am currently president of the Association.

ICGA is opposed to higher reservoir levels in the upper basin lakes of the Missouri River. You may rightfully ask why the opinion of an Illinois Association should be heard in regard to this issue. The answer is simple. Our river systems can not be managed in a way that looks at just a single river or a single portion of a river. The linkage between our rivers and streams is direct, and this is very evident when you look at the relationship of the Missouri, Mississippi, and Illinois Rivers.

Farmers in at least a half dozen Midwestern states depend on the efficient operation and dependability of river transportation for their livelihood. The same can be said for all U.S. citizens who benefit from the boost agricultural exports give to our economy and our trade balance. The entire public also benefits from the flow of non-Ag goods from road salt to construction materials which would be significantly more expensive without the benefit of efficient and dependable river transportation.

A good example of the interdependence of our river systems is the importance of the Missouri River water contribution to the Mississippi. During the summer and early fall, the Missouri can contribute more

than 60 % of the water flow entering the Mississippi River near St. Louis. And we have ample experience in what drought induced changes in the Missouri's water volume can do to river traffic on both the Mississippi and Illinois River. It can turn sections of the Mississippi into beach property and bring river commerce to a complete halt.

Tinkering with higher reservoir levels in the upper basin lakes of the Missouri is like playing roulette with river transportation. It invites increased incidents of interruptions in river traffic. Illinois is a key beneficiary of the water transportation system because more than 45 percent of the state's corn crop and over 50% of our soybean crop are exported to customers overseas.

ICGA believes the "spring rise" approach places undue consideration on upstream recreational and environmental interests. It is my understanding that the concept of "adaptive management" has insufficient scientific validation. How can we move forward with such a plan without appropriate, conclusive data and scientific acceptance that this route will lead to species recovery.

I am a farmer, not a scientist, but I do know there are enough widely varying opinions on the potential benefits of a "spring rise" that it would be ill advised to move forward at this time. I find myself asking why...if this new theory of river management is correct no one is asking for us to apply it to the upper reaches of the Missouri as well? Why not remove the dams on the upper reaches of the Missouri too?

Are we prepared to pull the plug on this volume of commerce based on scientific theory? Some supporters of the NAS study will try to tell you they don't advocate the ending of navigation or the evacuation of the flood plain. ICGA believes what is being proposed is a sure and certain recipe to seriously curtail and possibly end navigation. (1) Restoration of the natural flood pulse; (2) Restoration of natural low flows; (3) Restoring a meandering channel; (4) Restoring cut-and-fill alluviations; (5) Restoring natural riparian vegetation; (6) Increasing variations in water temperature; and (7) Removal of extensive bank

stabilization and stream channelization. When looked at in combination you have a half-baked plan to kill navigation, either innocently or contrived.

I could take up more of your time discussing how many rail cars and semi-trucks it would take to move the cargo currently moving on this interdependent river system. Or I could expound on the increased traffics risks and road maintenance costs associated with increased truck numbers. Or I could point out the increased air pollution related to all these trucks, but I think you already know all this.

In the final analysis it would be nice to return our rivers to a completely natural state. However, the American public decided decades ago that the diverse benefits of river transportation - when managed wisely - are too overpowering, too important to our economy, and too important to our future.

We have empirical data and practical experience documenting the risk of flooding and the potential financial losses resulting from reduced internal drainage. The ICGA supports non-flow species habitat restoration alternatives as a method of addressing species concerns, because reduced summer flows would end navigation on the Missouri and threaten barge traffic on the Mississippi River system. The current water control plan in place seems our best course. Thank you for your attention and the opportunity to testify.

**Oral Statement
Of
Paul C. Rohde
Vice President
MARC 2000**

**Missouri River RDEIS Public Hearing
Quincy, Illinois
January 23, 2002**

Good evening General, and thank you for this opportunity to speak to you tonight. My name is Paul Rohde. I am Vice President of the Midwest Area River Coalition 2000, a public advocacy coalition of entities spanning the length of the Missouri, Mississippi and Illinois Rivers. Our members employ or self-employ over 150,000 individuals in the river basin, operating in over 24 states. Our key mission is the long-term viability of navigation infrastructure on all three rivers.

We appreciate you scheduling another Quincy hearing in order to receive testimony from other constituencies who are just as adversely affected by proposed changes on the Missouri River as those directly along the Missouri. However, we reiterate our concern that these hearings are being held prior to the completion of adequate Mississippi River impact analysis. Consequently, we support the National Academy of Sciences' recommendation for a

moratorium on any proposed changes to the Missouri River Master Manual at this time.

We respect the challenge presented to the Corps and hope our testimony helps clarify certain points. Tonight, I would like to speak briefly on the role the Missouri and Mississippi Rivers have on the lives of those who inhabit this part of the Midwest.

Our rivers are an interdependent system. The fact that we are meeting here, north of the confluence of the Missouri and Mississippi Rivers, is in itself testament to the interconnection of our rivers and, therefore, the interconnection of its people here in the Midwest, and for that matter, even with those who live up-river, and with whom we don't see eye-to-eye on the issue of the Missouri.

This debate has brought forth attempts to minimize the Missouri as a navigable river, and downplay the navigation industry's role, and the role of related industries, to the region. The benefits enjoyed by waterway navigation can not be viewed as expendable during this process. Water compelled rates from Missouri River navigation decrease transportation costs for the 38 million tons moved by rail each year. The interconnected capacity waterway navigation

plays, along with rail and truck, to transport the commodities that ensure the Midwest's economic viability, can not be understated. The Missouri River is a vital economic asset to the region's overall economy and especially to the importance of the Upper Mississippi River System, ensuring the Midwest's economic status as America's 'third coast'.

Region-wide, navigation affords industry and agriculture producers and consumers \$75-200 million dollars more in benefits by keeping rail and truck rates competitive. Navigation on the Mississippi is an industry that creates and supports over 400,000 jobs to this region, and transports an average of 100 million tons of commodities. Almost 70% of our agricultural exports travel this river system, supporting one of the positive balances of trade in a time of economic uncertainty.

Navigation benefits are enjoyed by all of us – consumers, through lower prices for products; American workers, miners and farmers, by reducing their transportation costs; manufacturers, through lower raw material costs made available by inexpensive transport and less expensive distribution of products; and to shippers. And that money saved goes back to the communities where we live and work – back to home and car purchases; to local stores for

groceries, gasoline, clothing and entertainment; to health care and insurance; to employing full- and part-time help; for farmers, it goes to equipment and to the feed store; and of course, that money saved is also returned in local, state, and federal taxes.

As far as the Quincy area citizens are concerned, any changes to the CWCP (Current Water Control Plan) for an experiment on the Missouri River is also an experiment on the Mississippi River, and those who make their livelihood here, both up- and down-river of the confluence. You cannot segment a river, despite the NAS report's suggestion. Any action taken on one portion will have effects on the entire river system as a connected entity.

Jeopardizing navigation on the Missouri will have adverse affects in the Mississippi. Effectively Land-locking the Upper Mississippi region with low water flows and higher reservoir levels under all but the CWCP proposals will be a detriment to our economy, environment, and standard of living.

The elimination of Missouri River navigation would also have detrimental effects to the Mississippi River, both up- and down-river. By jeopardizing the average of 100 million tons traveled along the Upper Mississippi River System each year with lower water flows and higher reservoir levels, we could be sentencing

this region to almost 4 million additional trucks on our region's highways. You can imagine the negative environmental impact this would have, not to mention the additional construction and repairs, and accidents and fatalities that would ensue on our already over-extended highways. These impacts cannot be discounted when considering all the affects of changes to the CWCP.

The recently released report from the National Academy of Sciences confirmed the glaring questions still left unanswered regarding solutions to the challenges facing the Missouri River. Certainly, human lives – not only their livelihoods, but the possible threat posed to life itself, if these changes to the Missouri River should be employed - should have a higher priority over unknown and untested results that may occur to the ecosystem.

Recreation is certainly an interconnected entity of the river that deserves mention. The Corps, however, values recreation according to a different methodology than navigation, resulting in misleading statistics. We have made our points on this at previous hearings. My only addition: if the Current Water Control Plan allowed recreation to grow and prosper into an \$85 million dollar industry, as the Corps purports, the CWCP can't be all bad.

CONCLUSION

MARC 2000 opposes five of the six alternatives and believes that the CWCP provides the best alternative to meet all Congressionally authorized purposes, including navigation, flood control, recreation, hydropower and fish and wildlife needs. We respectfully call for a moratorium on any revision and withdrawal of the Service's Biological Opinion for review against the documentation provided by the NAS.



Adams County Farm Bureau



330 SOUTH 36TH STREET • P.O. BOX 3037 • QUINCY, ILLINOIS 62305 • (217) 222-7305

January 23, 2002

U.S. Army Corps of Engineers
Northwestern Division
Attn: Missouri River Master Manual RDEIS
12565 W Center Rd
Omaha NE 68144-3869

I am Shawn Valter, Manager of the Adams County Farm Bureau. We are an agricultural association representing over 1600 farm families in Adams County. These families depend on the river to export their locally grown grain to the world markets.

The proposed changes to the Current Water Control Plan for the Missouri River could have a severe negative impact on our already financially burdened farm families. In times of drought, lowered summer flows would limit navigation, essentially stopping the barge traffic on the Mississippi River.

The Farm Bureau is also concerned with adaptive management practices, which would create too much freedom for the Corp to adjust flow management, without any significant input from the public.

We appreciate the opportunity to comment on this issue and oppose any revision that would be detrimental to our farm families. We are in support of the Current Water Control Plan for the Missouri River.

Sincerely,

Shawn Valter, Manager
Adams County Farm Bureau



**RDEIS Missouri River Master Water Control Manual
January 23, 2002 Public Meeting
Quincy, Illinois**

My name is Ed VanderMeulen. I am the Area Distribution Manager in the River Region of Lafarge North America.

Lafarge North America is a leading producer of building materials in our country. We are dedicated to providing the very best products and services to build our country, and we are strongly committed to our environment. We transport millions of tons annually on the U.S. inland waterway system. We have numerous plants and distribution terminals on the rivers. Our employees live and work in riverfront communities. The water that sustains our lives comes from our rivers.

The Missouri River is very important to us. We have cement plant at Sugar Creek, Missouri and a distribution terminal in Omaha, Nebraska. The river is a natural and an environmentally preferable supply line from our plant to our terminal, one we have used responsibly for 36 years. Our manufacturing processes require a variety of bulk materials and fuel, which are transported in the most efficient and environmentally responsible manner – on the rivers. We have invested substantially in our plant and in our specialized barges to increase our abilities to supply building materials into the upper Midwest. Lafarge North America has the need to transport (annually) approximately 500,000 tons on the Missouri River, bringing in materials and fuel, and moving finished products to market. We can only do so if the river is navigable on a consistent basis.

River transportation allows us to produce and sell our products competitively. River transportation keeps costs down (for everybody). It provides a competitive balance with other modes of transportation. It's good business and it's good for the consumer. As such, it is beneficial to all of us. But even more importantly, please consider that: One gallon of fuel moves one ton – 514 miles by barge, 202 miles by rail, and 59 miles by truck. One barge hauls the same as - 15 rail cars, or 58 semi-trailer trucks. For every ton we must haul by truck – we use 826% more fuel, exhaust emissions increase by 709% and we contribute to the national dilemmas of truck tire disposal and vehicular accidents. River transportation is good for the environment in a very substantial way.

These benefits are not limited to the Missouri River basin. The Lower Mississippi River (the "main stem" if you will, of the Ohio River, the Upper Mississippi, the Missouri, and all of their navigable tributaries) receives a substantial amount of its flow from the Missouri. Without that flow, the effects spread over a wider area. From Pennsylvania, Minnesota, and South Dakota to the Gulf of Mexico – higher costs, elimination of commerce, more fuel and pollution, and yes, more truck tires.

A "fractured" navigation season on the Missouri damages, if not eliminates, the economic viability of this valuable resource while resulting in predictable and undesirable environmental impacts. Lafarge North America strongly supports the current water control plan for the operation of the Missouri River.

RIVER REGION

Midwest & West Central Distribution
1850 E. 53rd Street, Suite 6, Davenport, IA 52807
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The Project

ENVIRONMENTAL
RIVER ENGINEERING ON THE MISSISSIPPI

Engineers and biologists are typically thought to be at odds when addressing environmental issues. Each are often faced with agendas that appear to be in direct opposition to the other. Engineers on the Mississippi River have the mission to maintain and improve navigation. Biologists are concerned with maintaining and improving the habitat for plant and animal life that flourishes in a river habitat. These two, seemingly different goals, can in fact, complement each other.

The St. Louis District Corps of Engineers has proved through their *Environmental River Engineering Project on the Mississippi* that they can improve navigation through the use of new, innovative river structures and also positively impact the biological environment.

The project began two decades ago when St. Louis Engineers began to look at existing navigation structures and analyze their ability to meet environmental as well as navigation goals. A team of biologists and river engineers was established to study the designs' effectiveness by measuring navigation improvement and the ability to improve habitat diversity. In addition, each design's cost-effectiveness was measured against the cost of traditional structures.

The result is a system of river structures that meet environmental, navigation and economic goals. The *Environmental River Engineering Project on the Mississippi* has been used as a model in other Corps districts. And, the structures resulting from this project are being used in other locations throughout the country.

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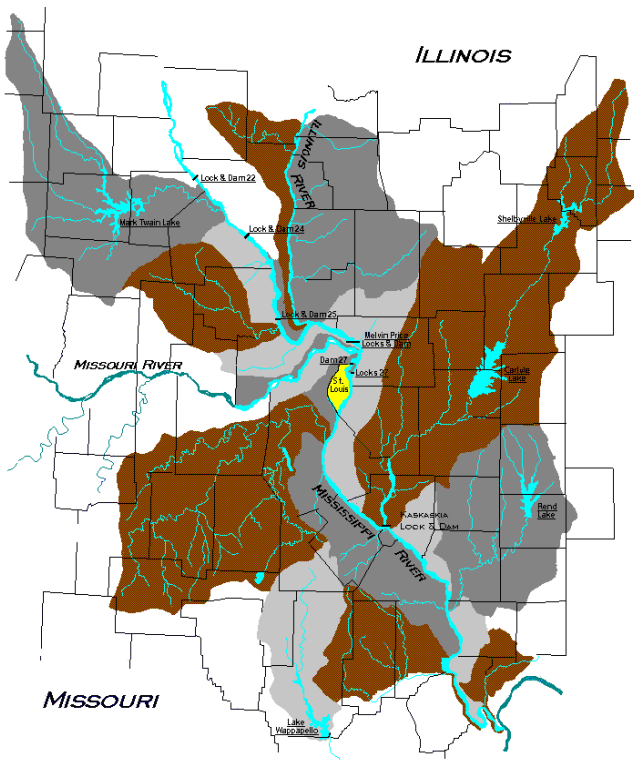
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The Mississippi River

ENVIRONMENTAL
OVER ENGINEERING ON THE MISSISSIPPI

Geography



The Mississippi is over 2,220 miles long and has been in existence since before the last ice age. The Mississippi is the second longest river in the United States and the third largest river basin in the world, exceeded in size only by the watersheds of the Amazon and the Congo. All water between the Appalachian Mountains in the East and the Rocky Mountains in the West eventually flows into the Mississippi.

The Mississippi River Basin is a very large system, with watersheds draining 1,245,000 square miles. The central portion is known as the Middle Mississippi, defined as a 300 mile reach from Saverton, Missouri to Cairo, Illinois. St. Louis, Missouri is located about halfway between these two points. Further defining the Middle Mississippi are the confluences of three major tributaries, The Illinois River, The Missouri River and The Ohio River.

The Mississippi River

ENVIRONMENTAL
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History

“...steamboats on the Mississippi all burn wood, and such are the immense quantities destroyed in this manner that had not nature provided an inexhaustible supply, some other fuel would have had long since to take its place.”

-Henry Lewis, a traveler, 1848



The natural state of the Middle Mississippi River is narrow and deep. In the early 1800s, forests of trees spread out across the rich alluvial bottomlands and lined the river's banks. The river was so narrow that settlers could stand on the bank at Cahokia, and shout across to the settlement at St. Louis for a boat to come and ferry them across.

The Louisiana Purchase in 1803 marked the opening of the West. Settlements along the Mississippi like St. Louis began growing. In 1817, the first steamboat arrived in St. Louis, the Zebulon M. Pike. The population of St. Louis soared, and steamboat arrivals followed suit. From three arrivals in 1817 to more than 3,600 arrivals in 1858, steamboats had turned the Mississippi into a superhighway.

The rich timber resources which lined the Mississippi's banks were used to build rapidly expanding settlements, cleared for agricultural purposes and steamboats, as well as used to fuel the steamers' voracious boilers. As the steamboats and settlements grew, great forests of timber were cleared.

As the timber vanished, the river banks became less stable and rapidly deteriorated. The river widened and the less stable banks crumbled and fell. Trees were thrust into the river impeding navigation, and the congestion of the river traffic combined to make navigation difficult and steamboat travel dangerous. Many lives and vessels were lost.

Role of the River Engineer

ENVIRONMENTAL
RIVER ENGINEERING ON THE MISSISSIPPI

“the military engineers have taken upon their shoulders the job of making the Mississippi over again- a job transcended in size by only the original job of creating it.”

*-Mark Twain
from Life on the Mississippi*

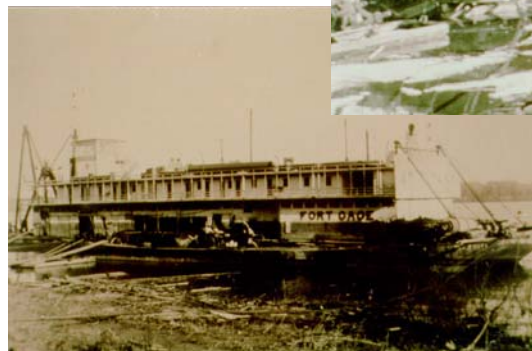
“ To construct the stream according to conditions imposed or assumed can be done successfully if we know all the facts and relations which enter into the problem. The omission of one may be fatal to success; hence all arbitrary changes are to be avoided. But nature overlooks nothing and we may confidently assume that the position and direction of the river at any time is the resultant of all the forces, and consequently, is a concrete expression of the law of the stream, which we may modify and preserve, but may not safely destroy or radically change.”

-Colonel James H. Simpson, 1875

The condition of the river had reached disastrous proportions. To correct the situation, Congress, in 1880, directed the Corps of Engineers to create and maintain a safe and dependable navigation channel and return the river to its once majestic condition.

The river engineers had to begin a bold plan to reverse man's destruction. This effort was begun by stabilizing the river banks and designing navigation structures that worked in harmony with the natural laws of the river.

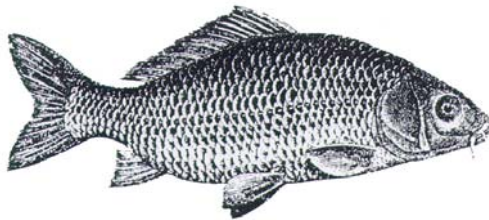
A variety of methods and navigational structures were employed. River banks were stabilized, dredges removed sediment from the channel, and snag boats were used to clear downed trees, wrecked steamboats, and other debris.



The Mississippi Today

ENVIRONMENTAL
RIVER ENGINEERING ON THE MISSISSIPPI

	1820	1880	1968
Width	3,600 feet	5,300 feet	3,200 feet
Riverbed area	95 square miles	128 square miles	83 square miles
Island area	14 square miles	35 square miles	17 square miles



Today, the river closely resembles the dimensions it held in the early 1800s. Achieving this goal required the use of a variety of river structures which worked to guide the current, stabilize banks and encourage a narrowing of the river's width through a natural buildup of siltation. The process took many years.

The Middle Mississippi River has been restored to its majestic size and its navigational systems have been strengthened. Once this objective had been achieved, the Corps began taking a closer look-examining the biological impact of the navigational structures on the river's ecosystem.

When the Missouri Department of Conservation contacted the St. Louis District Corps of Engineers in 1970 and explained their concern over the lack of species diversity in the Mississippi River, the Corps began a serious inquiry into ways this situation could be corrected.

This initial inquiry led to a twenty-year project that continues today. The *Environmental River Engineering Project*, the first of its kind on the Mississippi River, sought to maintain the navigation channel in an environmentally sensitive manner; to work in harmony with the natural laws of the river.



The Problems

ENVIRONMENTAL
RIVER ENGINEERING ON THE MISSISSIPPI

Meandering River Channel

The Mississippi likes to meander as it travels south. This meandering creates havoc with the navigation channel which the Corps must maintain at a nine foot depth.

The river likes to cut new channels in areas where it makes sharp twists and turns. In places where the current hits a protruding river bank, it begins to wear down the exposed bank, eventually forming a side channel and later a main channel.



The Problems

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RIVER ENGINEERING ON THE MISSISSIPPI

Eroding Banklines

Banklines on both sides of the river are exposed to erosion. The bankline along the fast moving side of the river is exposed to the river's relentless current, scouring above and below the water line. The river bank running along the slow side of the river can also be exposed to erosion. Wind, rain, man, and the river itself all contribute to the loss of bankline stability.



The Problems

ENVIRONMENTAL
RIVER ENGINEERING ON THE MISSISSIPPI

Sedimentation/ Navigation Concerns



▲ September 1934



▲ October 1934



▲ March 1936



▲ October 1939



▲ September 1956



▲ Present Day

Each year the Mississippi carries approximately 130 million tons of sediment to the Gulf of Mexico. That which doesn't reach the Gulf adds approximately 300 yards to the State of Louisiana each year. The rest is deposited in the river channel. How much and where depends on the speed of the river and the size and placement of the object impeding its flow.

Sediment diminishes the river by destroying aquatic life. Biological diversity is best achieved with a variety of river habitats including slow water and wetted edge, often found along banklines. Historically, the use of dikes and the resulting sediment build up assisted in narrowing and improving the channel. This is no longer desirable as this process takes away from the river's natural state.

These photos, all taken at the same location over a period of 50 years, show the results of the gradual accumulation of sediment.

The Problems

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Sedimentation/ Biological Concerns

Even without the use of dikes, sedimentation is a naturally occurring phenomenon. Traditionally, it was managed through the use of dredging. Disposing of the dredge material in an appropriate manner can also negatively impact the environment.

To a biologist, sedimentation is the process of

turning an aquatic environment into a terrestrial habitat. While both environments are looked on favorably by the biologists, eliminating one in favor of another is unhealthy. Healthy ecosystems need a variety of diverse environments.

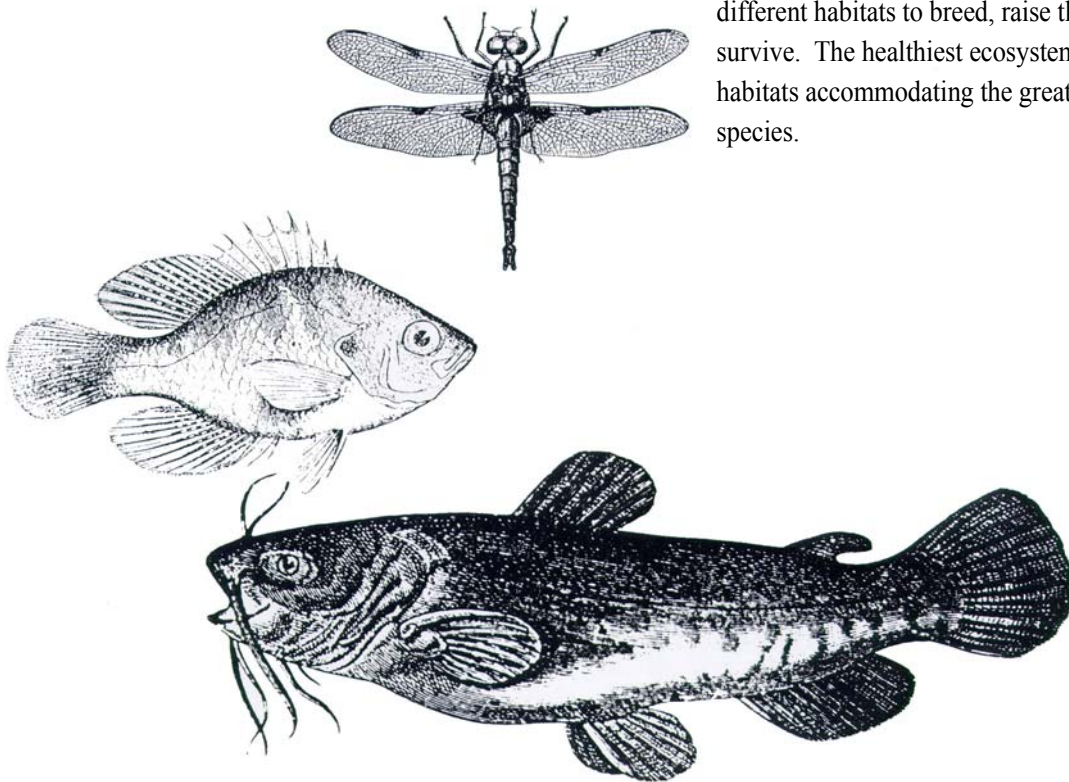


The Problems

ENVIRONMENTAL
RIVER ENGINEERING ON THE MISSISSIPPI

Homogeneous Environments

One long, deep river creates a homogeneous environment that is unhealthy to the ecosystem. Ecosystems are built on food webs. Protozoa are consumed by insects, that are consumed by small fish, that are consumed by large fish, that are consumed by man and other predators. Different species require different habitats to breed, raise their young and survive. The healthiest ecosystem offer diverse habitats accommodating the greatest number of species.



The Problems

ENVIRONMENTAL
RIVER ENGINEERING ON THE MISSISSIPPI

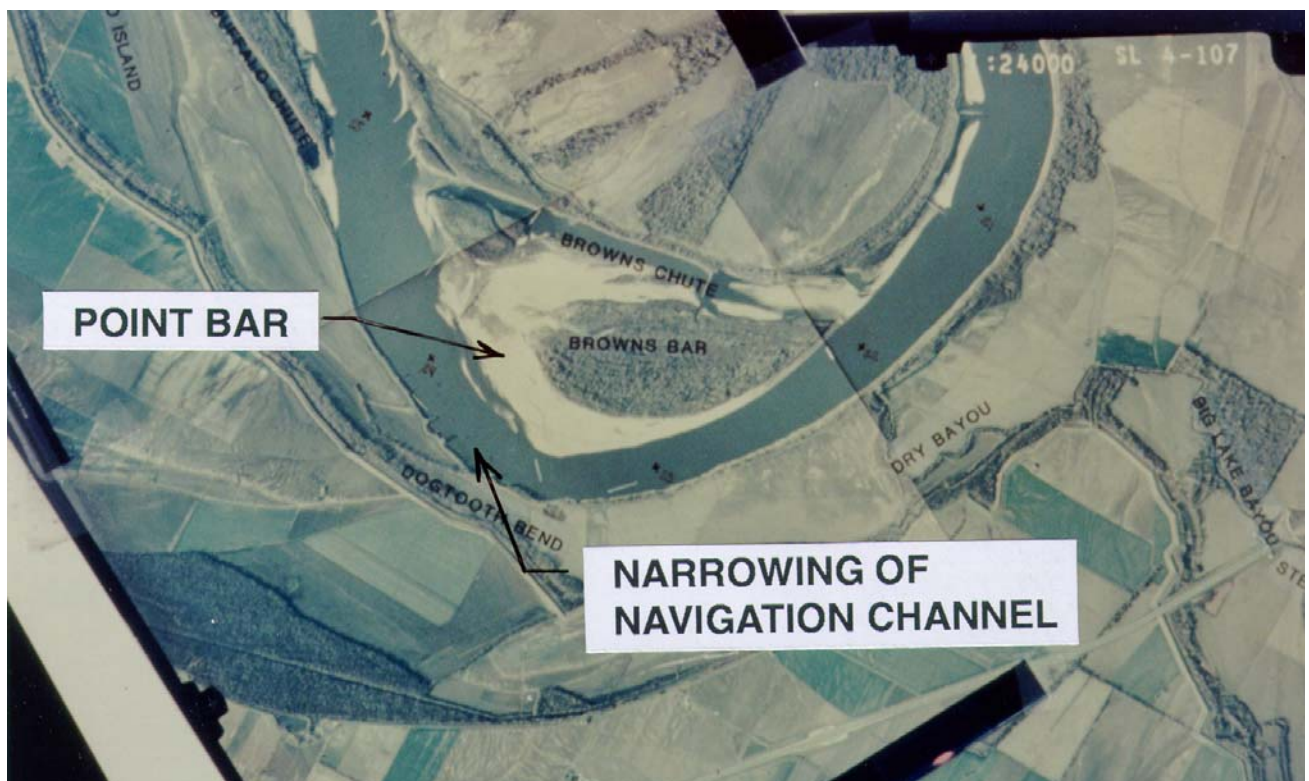
Narrowing of Channel Widths In River Bends

Since the late 1800s, when revetment and stabilization work began, the river has found ways to challenge man's ability to harness its tremendous energy.

Because the lateral erosion or meandering movement of the river has been held in check by these stabilization methods, the river has responded by diverting its lateral energy downward. This has caused a significant deepening of the river bends.

Sandbars on the inside of these bends formed points, commonly called point bars, which encroached into the navigation channel. The result has been the development of a severely narrow, deep, and swift navigation channel. The negative impacts of these river bendways create destruction and costs of great magnitude to both the navigation industry and the environment.

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The Problems

ENVIRONMENTAL
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Navigation Impacts of River Bends



Groundings have historically occurred in bends as far back as the days of steamboats. Groundings are dangerous to both crew members and passing tows. They result in loss of time and money, and may be environmentally hazardous.

From 1985 to 1988, in the reach of river from St. Louis, MO to Cairo, IL, there was an average of 20 groundings per year that occurred in the bends. Many of these accidents were a result of the barges running aground on the point bars or crashing into the outside riverbanks. Some accidents were catastrophic to the environment, spilling oil and cargo into the river channel.

The narrow bends enabled only one tow to navigate the bend at a time. This created huge bottlenecks which cost time and money to the industry and ultimately the customer. In 1988, an investigation revealed that the costs associated with time delays in bends reached \$24 million.

The formation of ice in the river can jam in the narrow bends completely blocking the navigation channel and forming massive ice dams. When breached, the ice flow may damage and destroy everything in its path.



The Problems

ENVIRONMENTAL
RIVER ENGINEERING ON THE MISSISSIPPI

Environmental Impacts of River Bends



The U.S. spends millions of dollars each year dredging point bars in troublesome bends to keep the navigation channel open. This remedial measure only serves as a short, temporary cure. The river naturally replaces the sediment during high water events. Frequent dredging also puts unwanted strain on the environment by releasing unnatural levels of suspended sediment and toxins from the sediment.

Excessive bankline erosion and overbank scour are phenomena caused by river conditions that exist in some bends. Although revetments usually protect the banklines, the bends are subjected to a tremendous amount of force from excessive currents. These conditions may lead to serious bankline and overbank erosion resulting in loss of adjacent wetlands and farmland.

In some bends, dikes were constructed on the sandbar side of the bendway in an attempt to improve the navigation channel. The Least Tern, a federally endangered species, uses many of these sandbars as nesting habitat. Dike construction on these sandbars may endanger or even eliminate the bendway's natural habitat.



The Problems

Environmental River Modeling

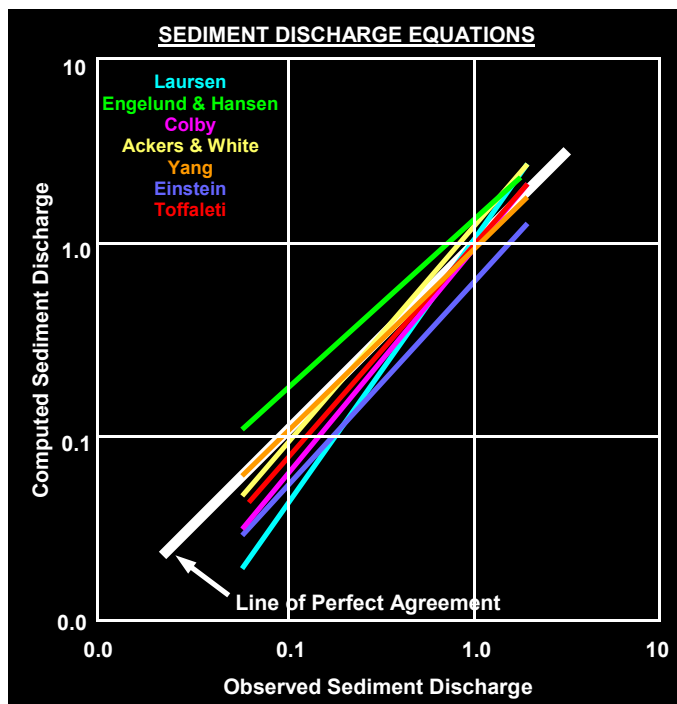


In the late nineteenth and early twentieth centuries, river engineers usually relied upon intuition, experimentation, and trial and error processes to design river training structures. Successful projects were hailed as engineering marvels while unsuccessful projects remained to be solved at additional cost. Many of these projects caused long term effects to the river environment and wildlife habitat. Today, in some cases, engineers are tasked with correcting the negative environmental effects of those real life experiments.

There has never been a simple set of equations or rules to follow when it comes to analyzing moving water and sediment. Hans Einstein, son of Albert Einstein, developed equations for scientists and engineers to use in solving sedimentation problems on rivers and streams. He cautioned, however, that his equations were based only upon experimental data, and therefore could not be applied in all situations. Many other notable scientists have also developed experimentally based approaches, equations and methodologies to address sedimentation. Discrepancies, conflicts, and general unreliability are common. In all probability, no other engineering discipline has involved such a vast disparity between theory and practice!

One tool that engineers used in the past and still use today is a large physical sediment transport model. These models are typically enormous in scale, some nearly the size of a normal football field. They are built to resemble an actual river or stream and contain running water and moving sediment. Engineers have used these large models since the early 1950s to solve major sedimentation problems.

Unfortunately, the cost of building, operating, and housing these models is exorbitant and the time required to obtain results can take years. These two factors are the primary reasons why the widespread use of large models is impractical for most engineering projects. Most modeling practices have not allowed the involvement of biologists, environmentalists, etc. when designing structures and solving sediment related problems.



Einstein's Bed Load Equation

$$\phi = \frac{q_B}{\gamma_s} \left[\frac{\rho}{\rho_s - \rho} \frac{1}{gd^3} \right]^{\frac{1}{2}}$$

The Objectives

“The more species in a biological community the healthier the system appears to be. The greater number of species, the greater opportunity for interaction which creates more energy pathways and produces a stronger system. Without diversity, the system will collapse.”

*- Butch Atwood, Fishery Biologist,
Illinois Department of Natural Resources*

The Corps developed a plan to solve the problems, defined its objectives, and established a team approach. The solutions to improve the biological diversity of the Middle Mississippi River had to be congruent with the Corps' directive to maintain a safe and dependable navigation channel. The solutions also had to be cost-effective.

The plan was to look at each of the navigation structures on the Middle Mississippi and analyze their biological impact. Then, address structural modifications which could make this impact more positive while maintaining the structure's navigation effectiveness.

Since these were separate and dissimilar goals, a team of biologists from the Missouri Conservation Department, the Illinois Conservation Department, the U.S. Fish and Wildlife Service and river engineers was formed to collect data before and after modifications and analyze the results of each project.

There are many factors that contribute to a river's navigability as well as species diversity. The one factor that the Corps could impact was habitat. The objectives focused on introducing these four habitats through design modifications of navigation structures.

PRIMARY HABITATS

There are four primary habitats which are important to a river ecosystem. They include:

Fast Water:	Water moving quickly, usually the current in the main river channel.
Slow Water/ Quiet Water:	Water outside of the main river channel moving slower than the primary river current.
Wetted Edge:	Land which is constantly getting wet and then dry again as the river rises and falls. This area is in a continual state of change. This habitat is very important as there is a constant exchange of nutrients from the land to the aquatic environment.
Terrestrial:	Land. Land separated from the shore is especially important because it is away from man and other predators.

The Solutions

ENVIRONMENTAL
RIVER ENGINEERING ON THE MISSISSIPPI

Just as there is no one problem, there is no one solution. The Middle Mississippi is a dynamic and fast-changing stretch of river. The Northern half (mile 300 to 184) contains locks and dams while the lower half (mile 184 to 0) is open river. Each changing condition on the river creates the need for different solutions. Each solution, in its place, creates the opportunity for a diversity of habitats.

From the start of the inquiry, the Middle Mississippi was studied as an entire river system where different structures were designed to fit specific locations on the river. Each structure was evaluated as to its ability to improve biological habitat and meet navigation goals, within the entire reach of the river.

Before being installed in the river, many newly designed structures were model tested using either traditional large models or new Micro Modeling technology. Model testing evaluates various alterations and allows engineers to try nontraditional design approaches without the cost risks associated with field testing.

Once the structure is in place and its navigation effectiveness evaluated, a team of biologists assesses its environmental effectiveness by analyzing the number of species found at each structure.

Primary structural designs include:

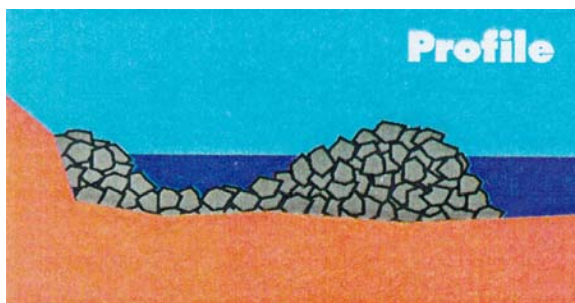
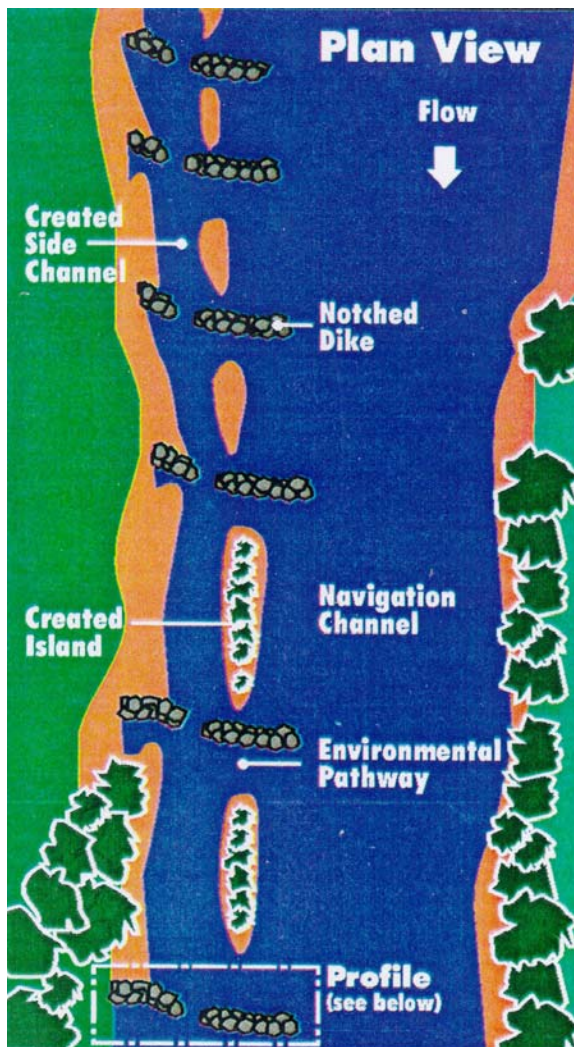
- Notched Dikes
- Stepped-Up Dikes
- Revetments
- Off Bankline Revetments
- Chevron Dikes
- Side Channel Improvements
- Bendway Weirs



The Solutions

ENVIRONMENTAL
RIVER ENGINEERING ON THE MISSISSIPPI

Notched Dikes



Rock dikes, running perpendicular to the shore, have long been used to guide the river and maintain the navigation channel. River engineers found that simply by adding notches, the dikes continue to create navigation dimensions as well as support diverse habitats. The river is allowed to move in and out between the notches creating all four of the primary river habitats. Sediment buildup forms small sandbars between each of the dikes. A variety of notch locations, sizes and widths were studied to create the optimum design. The overall result, however, is the creation of diverse environments by making a small but significant design modification (*drawing illustrates environments*).



The Solutions

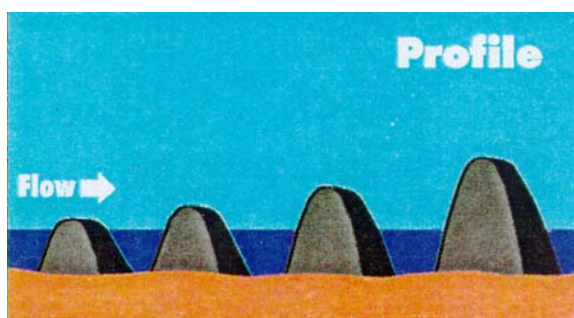
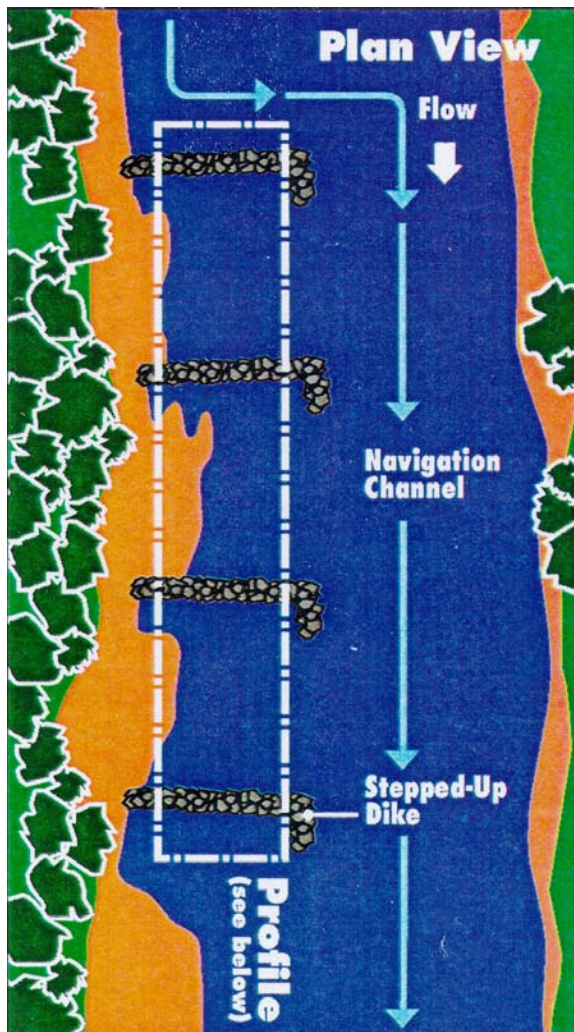
ENVIRONMENTAL
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Stepped-Up Dikes

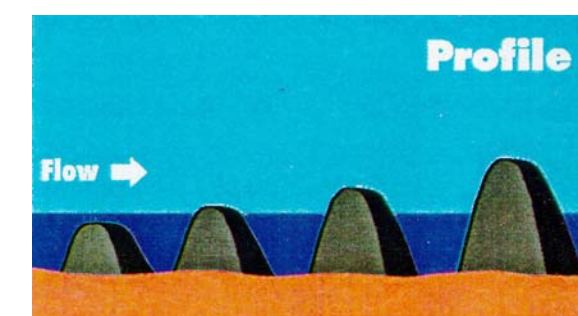
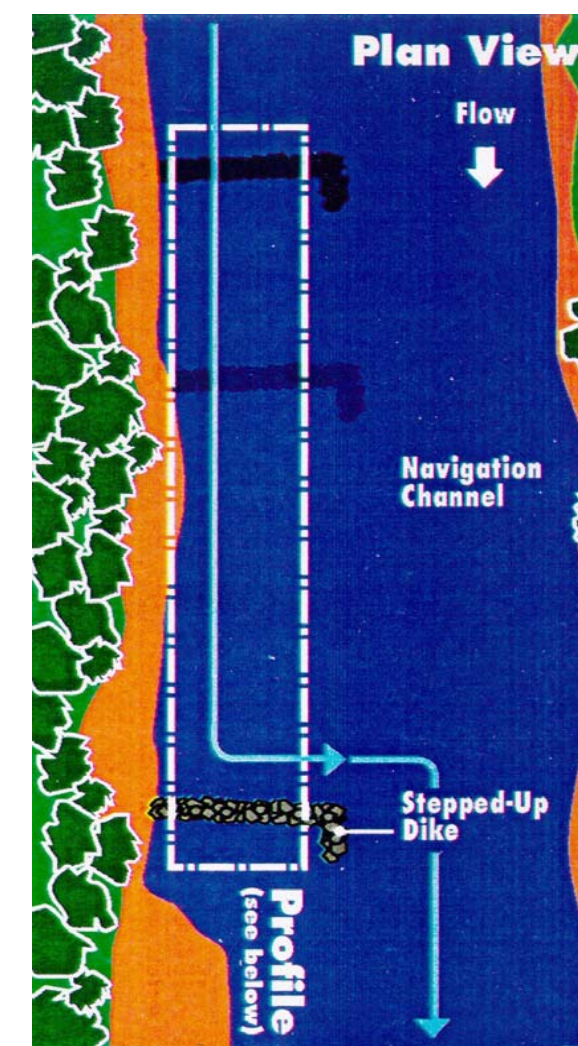
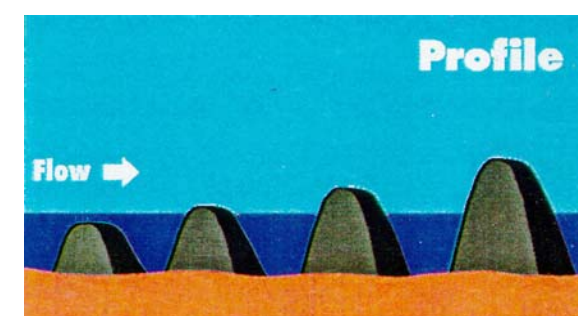
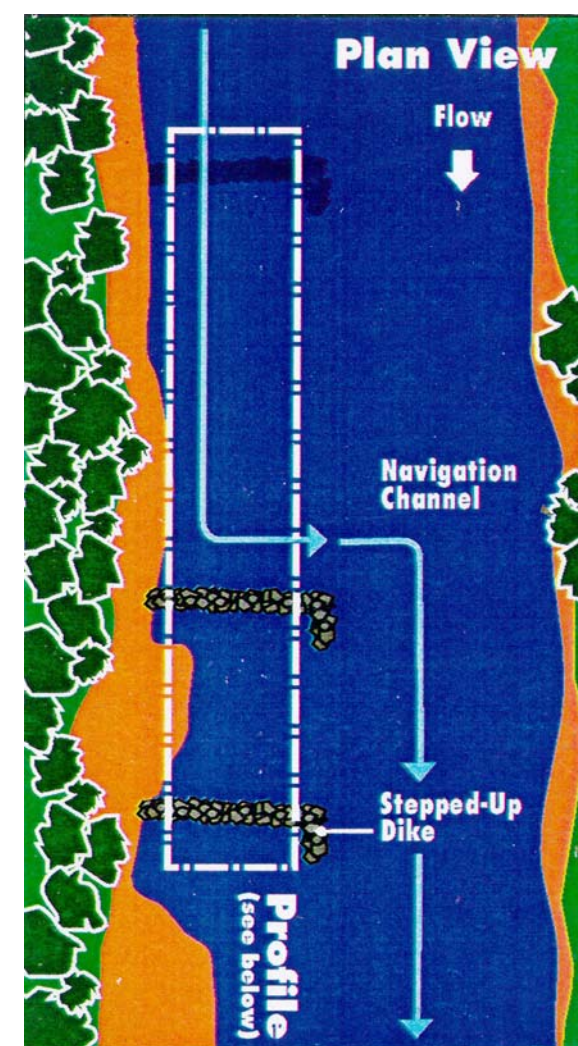
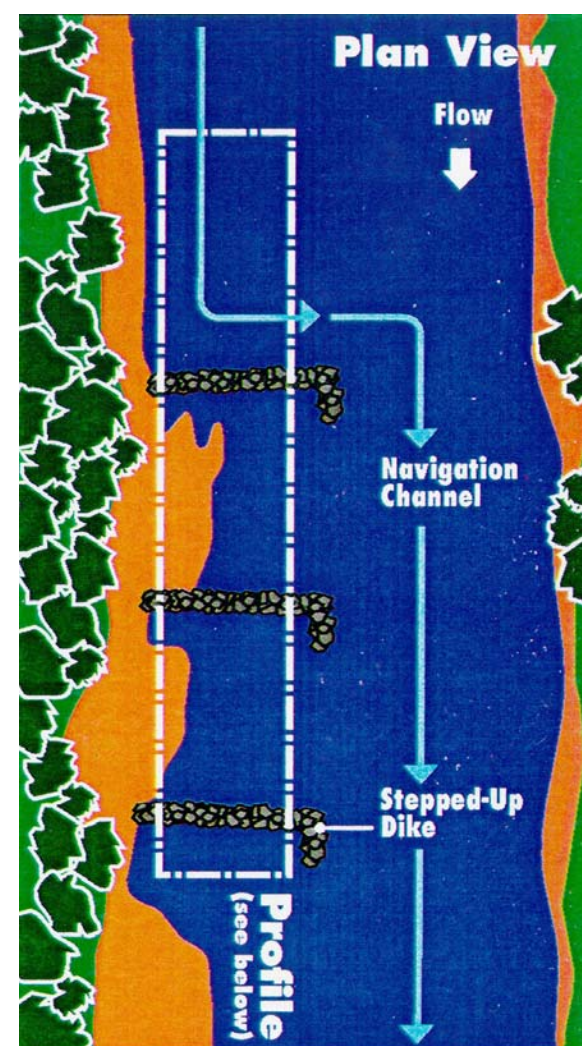
Stepped-Up dike fields of various elevations were developed to provide an additional element of diversity. They counteract sediment deposition, thereby preventing the conversion of aquatic environment into terrestrial. In the stepped-up dike configuration, each dike in sequence rises two feet higher than the previous one. This approach utilizes the river's energy to change the sediment deposits as the water level rises and falls.

(drawing illustrates environments).

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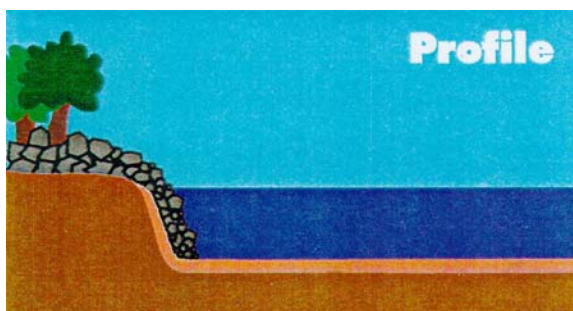
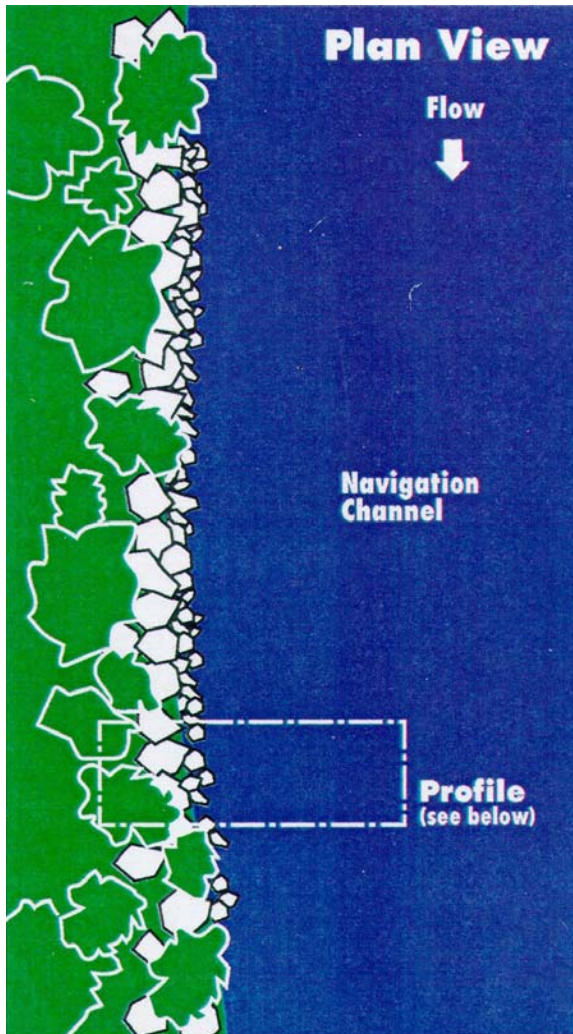


When the river's current hits the first dike it is propelled toward the main channel. As the river level rises, it moves over the first dike and hits the second dike, once again moving back into the main channel. This process repeats itself as the river rises and falls. The river's current, moving over each submerged dike, allows the sediment buildup to be redistributed back into the main channel and carried downstream.



The Solutions

Revetments



Traditional methods of stabilizing eroding riverbanks involved the removal of existing vegetation followed by grading the bank to form a stable slope on which to lay rock. The rock placed was relatively uniform with a maximum size of 400 pounds. The resulting environment was homogeneous and therefore did not provide for the same diversity as the natural river banks.

(drawing illustrates environments).

The solution was found using a different gradation of rock with a maximum size of 5,000 pounds. This change provided two important benefits. First, the larger maximum size rock provided greater bank stability. This removed the requirement to grade the bankline and remove all the vegetation. For the first time, trees and rock revetment could coexist.

The second benefit was the wider variation in rock size. The variety created with this gradation provided greater habitat diversity. In fact, it attracted more aquatic species than the natural caving bankline.



The Solutions

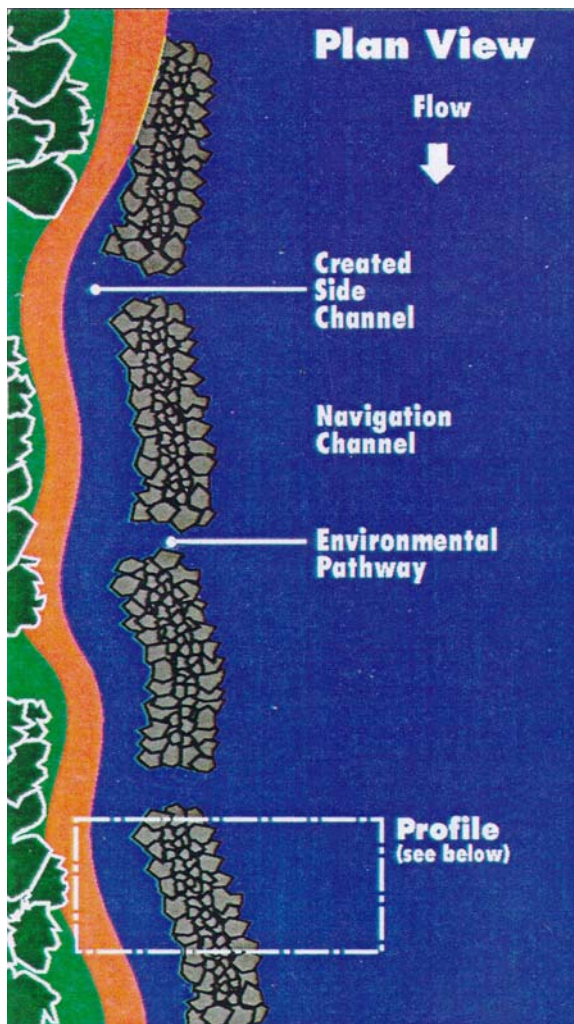
ENVIRONMENTAL
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Off Bankline Revetments

In areas where the caving river bank is on the shallow side of the river, there is a greater flexibility to design alternative solutions.

By placing a parallel structure of stone off the bankline, erosion is reduced and diverse habitats are maintained. In some areas, the revetment is notched allowing fish to move between the fast water and the slow water easily. The areas between the revetments and the bank line are considered to be prime fishing locations by both commercial and recreational fishermen.

(drawing illustrates environments).



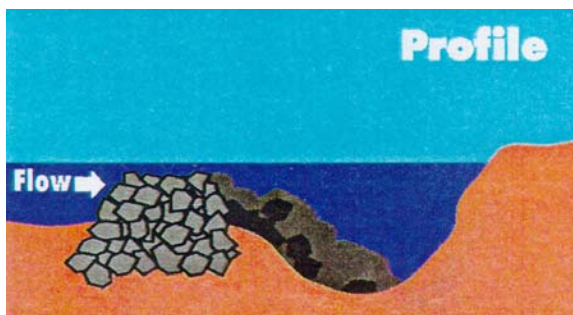
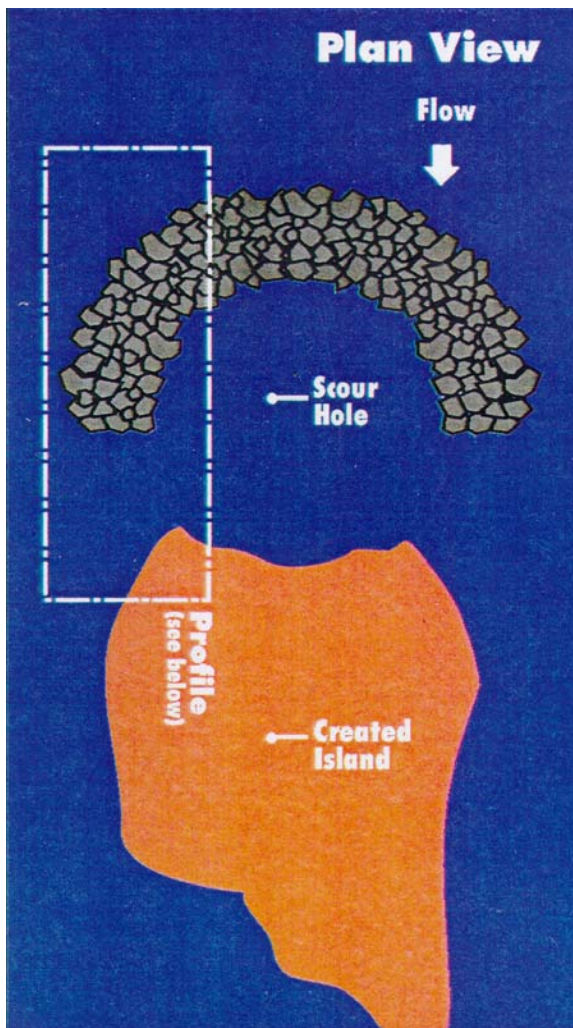
The Solutions

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Chevron Dikes

A navigation structure called a chevron dike was developed to improve river habitat and to create beneficial uses of dredge material. These structures are placed in the shallow side of the river channel pointing upstream. Their effect is to improve the river channel.

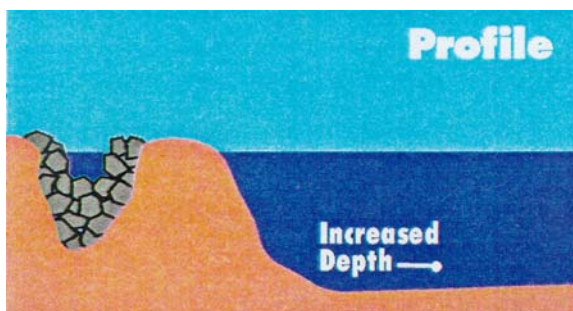
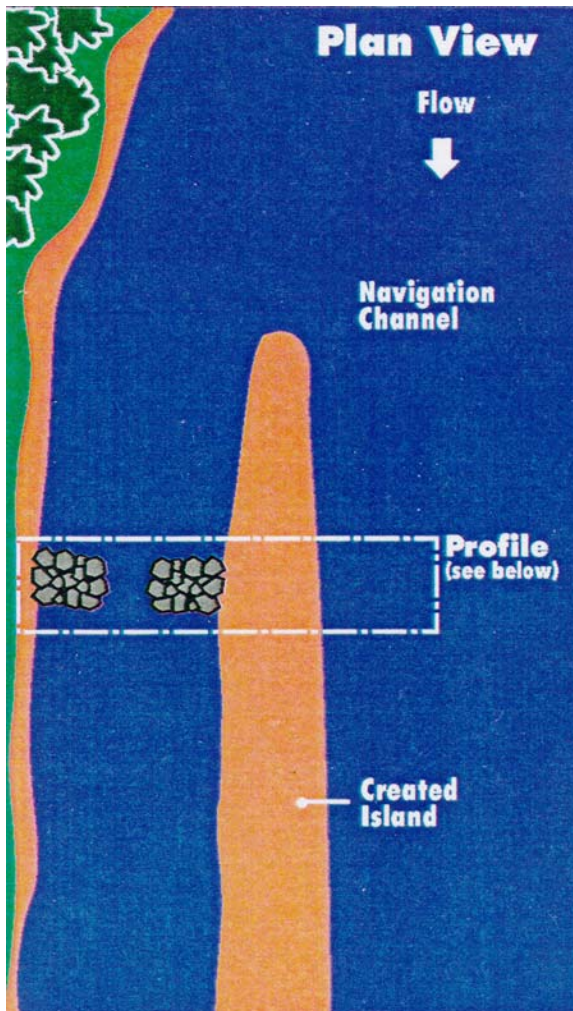
When dredging is needed to improve the main navigation channel, dredge sediment is deposited behind the chevron dike. These small islands encourage the development of all four primary river ecosystem habitats. In addition, various microorganisms cling to the underwater rock structures, providing a food source for fish. *(drawing illustrates environments).*



The Solutions

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Notched Closure Structures



Side Channels are not used for navigation, but are valuable environmental areas. Traditionally, these side channels were closed with rock structures to divert the flow into the main channel. While improving navigation, this process tends to fill the side channels with sediment and convert aquatic habitat to terrestrial habitat.

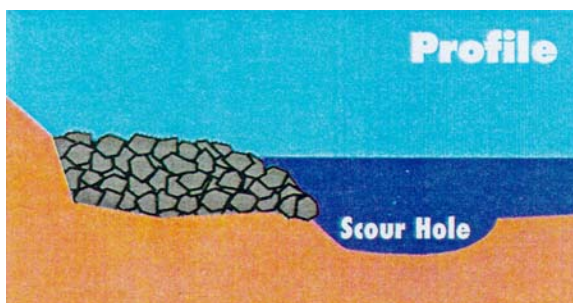
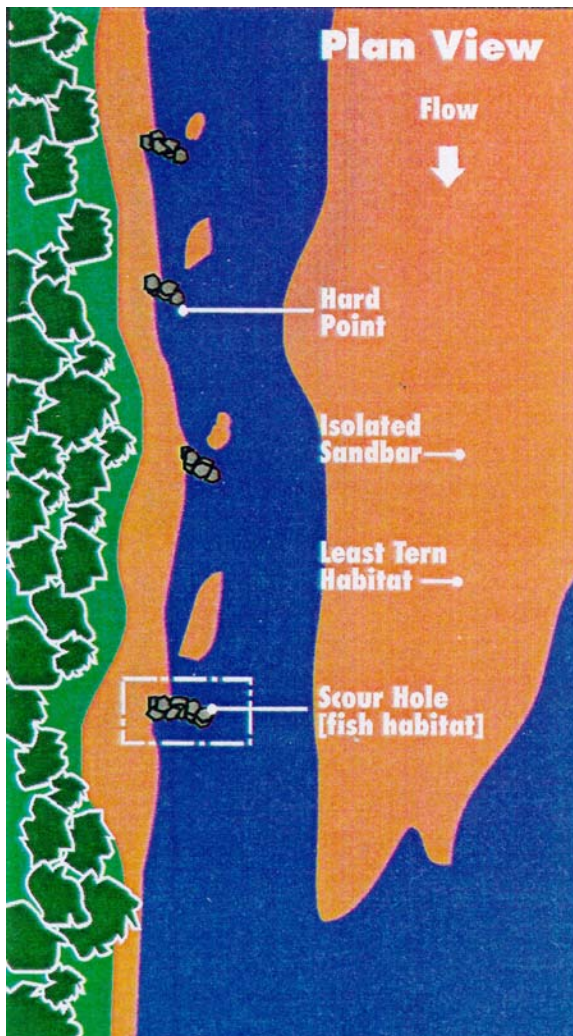
Notching a closure structure tends to keep the side channels from being filled with sedimentation. These structures form areas of deep water and shallow water creating a diversity of habitat, attracting different species of fish.
(drawing illustrates environments).



The Solutions

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Hard Points in Side Channels



Hard points are very short rock dikes that are used to stabilize side channel river banks. These navigation structures extend from the riverbank into the river and do not cause a significant buildup of sediment. Their contribution to habitat improvement is the creation of scour holes under the hard points. These deep plunge holes attract catfish that flourish in this environment.

(drawing illustrates environments).



The Solutions

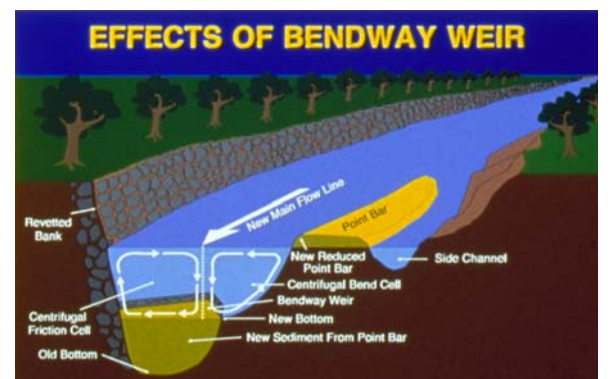
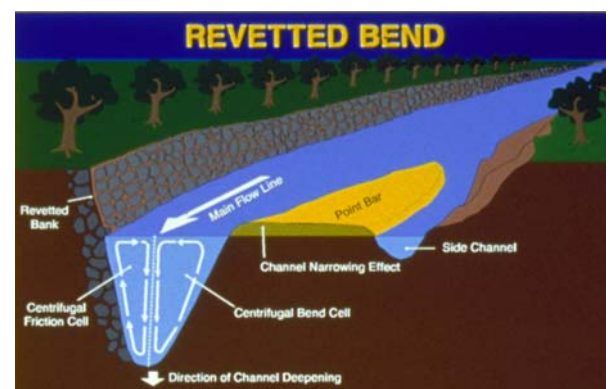
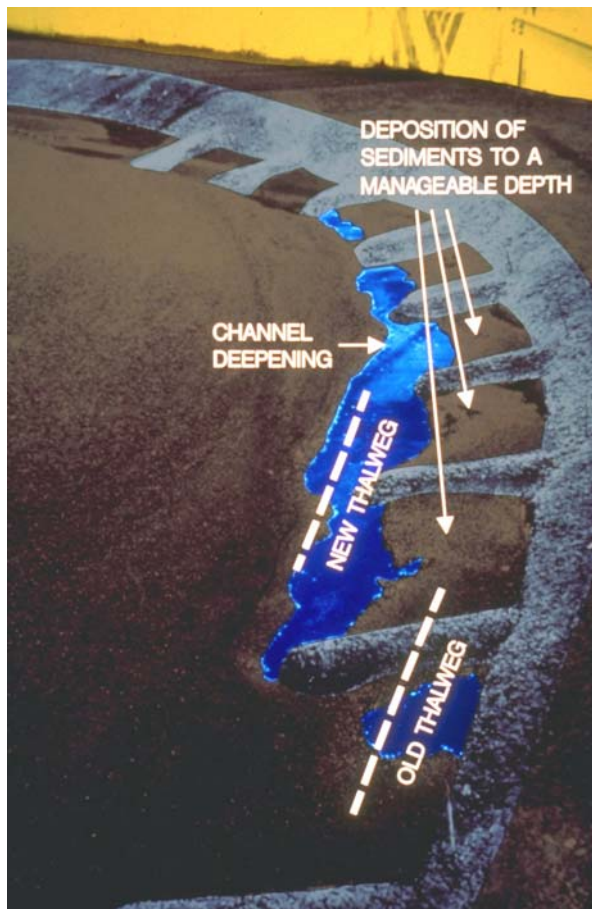
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Bendway Weirs



What is a Bendway Weir? The Bendway Weir is a low level, totally submerged rock structure that is positioned from the outside bankline of the riverbend and angled upstream toward the flow. These underwater structures extend directly into the navigation channel underneath passing tows. Their unique position and alignment alter the river's spiraling, secondary currents in a manner which shifts the currents away from the outside bankline. This controls excessive channel deepening and reduces adjacent riverbank erosion on the outside bendway. Because excessive river depths are controlled, the opposite side of the riverbank is widened naturally. This results in a wider and safer navigation channel through the bend without the need for periodic maintenance dredging.

The Bendway Weir also eliminates the need for dikes to be constructed on the inside of the bendway therefore protecting the natural beauty and habitat of this sensitive environment.



The Solutions

ENVIRONMENTAL
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Micro Modeling

Micro Modeling is extremely small scale physical sediment transport modeling. The technology was developed by the Corps of Engineers for use in studying the Mississippi River. Engineers are now able to replicate the mechanics of an actual river or stream on an area the size of a normal table

top. Since the Micro Model is much smaller than a typical large model, this presents the possibility of widespread usage by engineers around the country. The miniature scale not only allows significantly greater speed and accuracy by which solutions to problems can be achieved, but drastically reduces the cost of a typical sedimentation study. This enables the opportunity to incorporate environmental design into engineering design solutions. Environmental problems that would not have been modeled on a large scale in the past, may now be modeled on a micro scale. Unreliable and complex equations, construction experiments in the river, and large expensive models are now things of the past. Today, any river or stream can be replicated and studied with amazing simplicity.

Using Micro Modeling technology, an innovative engineering or biological design can be model tested, evaluated, and constructed in the actual river or stream within a few short months. Such progressive, high speed design and construction is unprecedented in the field of river engineering.

Micro controlled automation combined with highly accurate measurement devices are the keys to this technology. The hydraulic processes of a river or stream under study are replicated by employing a series of integrated process control valves, centrifugal pumps, micro level measurement gauges, and customized computer hardware and software.

These devices allow the engineer to automatically control the flow of water and sediment through the model. The engineer is then able to allow the natural, complex hydraulic principals of moving water and sediment develop a duplicate bed form of the actual river in the Micro Model. A high resolution three-dimensional laser scanner is then employed to collect bed topography data on the Micro Model.



The Results

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The Missouri Department of Conservation tested the diversity in habitats surrounding a test section of notched dikes. Their raw data showed a total of 4,512 fish and 45 different species. After studying the data, they found an increase in diversity and numbers of micro-invertebrates. To a lesser degree, fish communities were also found to have greater diversity. In addition, the larger problem of aquatic environment becoming terrestrial was resolved. The river channel is maintained, structures are basically self-maintained and biological diversity has increased.

Tests by the Illinois Department of Conservation studying habitat diversity surrounding bankline and off bankline revetments showed the use of larger rock provided habitat for a greater number of fish than either small stone revetment or the natural river bank.



Isolated sandbars created by the various navigational structures provide nesting sites for the endangered Least Tern. These sandbars are away from man's encroachment which helps aid their development. In addition, the easy access from slow water to fast water provides valuable spawning ground for the endangered Pallid Sturgeon.

Each structure is a piece of a giant jigsaw puzzle, having to "fit" exactly to create a safe and dependable navigation channel and at the same time, stimulate the river's biological diversity.

Innovative concepts will continue to be designed and evaluated as the river engineers proceed with the environmental river engineering project: *to work in harmony with the natural laws of the river.*

True Environmental Engineering



The Results

ENVIRONMENTAL
RIVER ENGINEERING ON THE MISSISSIPPI



Sampling shows fish love bendway weirs

It's called *aerodilypt*—an action has an unexpected positive side-effect. Bendway weirs are an innovative, cost-effective means to maintain safe, dependable navigation channels on the Mississippi River. The fact that fish (big fish) love them is aerodilypt.

The weirs are a series of low stone walls built underwater, arranged spoke-like against the outside curve of a river bend. They direct the current toward the inside curve, which scours a deep, wide navigation channel. There are more than 100 weirs in 13 bends of the Mississippi River in St. Louis District.

The positive effect bendway weirs have on navigation is well-documented. Their effect on fish was unknown, particularly on pallid sturgeon, an endangered species that's almost unchanged since prehistoric times.

Data on the fish living in bendway weirs were needed for an environmental assessment, but there was an obstacle. Sampling in deep, fast water had never been done.

Conventional sampling, like electro-fishing and netting, has been limited to depths less than 20 feet and velocities below two to three feet per second. In a bendway weir field, depths can exceed 50 feet and velocities can exceed six feet per second.

The Deep Water Sampling Group, with members from St. Louis District, Mississippi Valley Division, Waterways Experiment Station, U.S. Fish and Wildlife Service, Long Term Resource Monitoring Stations, the Missouri Department of Conservation, the Illinois Department of Conservation, and Southern Illinois University, met numerous times to develop techniques to sample in deep, fast water.



Rob Daviney (left), and Jerry Rapp examine a big fish taken at a bendway weir. (Photo courtesy of St. Louis District)

The final list included blasting, shocking, gill netting, trammel netting, trotline, and hoop netting.

"Deep water fish sampling is something we hadn't done before," said Jerry Rapp, river engineer. "Our group, which included Fish and Wildlife, tried various methods which might work in deep water, including blasting."

"There's some fish mortality no matter what form of sampling you use," Rapp added. "Blasting kills fish, but no other method gives as severe a rate a count. You can't send down divers because the fish spook when they see them."

Special techniques were needed. Placing charges for the blast, weighting the nets and anchoring trotlines was done using heavy blocks from the *MY Pathfinder*. The Pathfinder also helped collect nets.

For the blast, each agency provided at least one catch boat to capture fish after detonation. In fast water, fish could surface hundreds of feet downstream, so several boats were required to cover the area.

Placing charges and catch nets in the bendway weir field took about six hours. When the blast went off the results were immediate—many fish began surfacing. In all, 217 fish in 13 different species were captured. There were 75 fresh-water drum up to 20 pounds, 58 gizzard shad, 24 blue catfish up to 35 pounds, and one sturgeon.

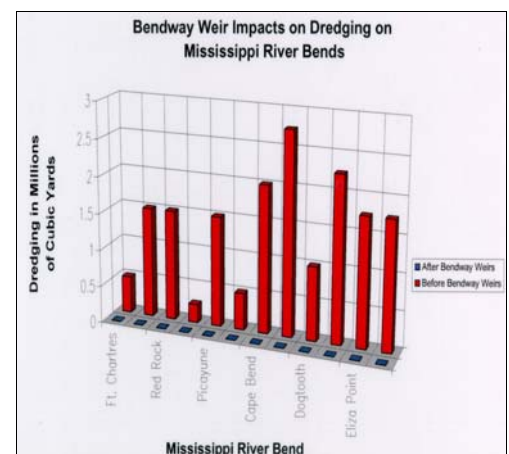
Other collection methods resulted in lesser catches. The method with the most promise was an electro-shocker on the Pathfinder. This could be lowered to depths exceeding 40 feet and a charge sent through the electrodes to stun fish. This worked well when stationary. Further modifications will be required to allow more maneuverability.

Water velocity and sediment movement in the bends caused the nets to move too much, and the trotlines and hoop nets silted over. The nets did make one significant catch—a sturgeon. The fact that sturgeon were collected proves they inhabit bendway weirs.

The group's environmental representatives will publish the results, and the methods will be refined.

The Bendway Weirs have not only provided navigation benefits, but many significant environmental benefits have been achieved as well. A wider and more smoothly aligned navigation channel has resulted so that traditional above-water dikes will no longer be built on the sandbars. Nesting Habitat for the Least Tern, an endangered bird species, is thus left largely undisturbed. Bendway Weir fields have also proven to provide habitat for a number of fish species. These environmental reefs have created diversity in the river bed and flow patterns in areas that were once narrow, deep, and swift. Monitoring efforts have shown that the federally endangered Pallid Sturgeon uses the weir fields significantly for their habitat.

In bendways where accidents and dredging were frequent, significant reductions have been made. Therefore, destructive impacts to the environment caused by tow boat accidents and dredging have nearly been eliminated. The Bendway Weirs have also contributed to the reduction of excessive bankline erosion and overbank scour in some areas. Because the weirs are located below the water surface and never seen, the scenic beauty of the natural river is preserved.

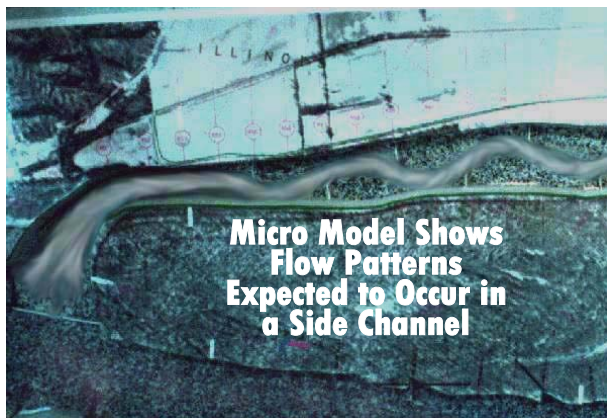


The Results

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RIVER ENGINEERING ON THE MISSISSIPPI

“The Micro Models enable one to see and understand the interaction of large reaches of a river, and also gain a keen understanding of how upstream changes can adversely or positively influence downstream conditions several miles away.”

*-Butch Atwood, Fisheries Biologist,
Illinois Department of Natural Resources*



The Micro Model is an excellent environmental engineering tool. Micro Models have addressed environmental issues on a number of Middle Mississippi River side channels. The use of models has resulted in preservation and creation of habitat for fish and wildlife. Micro Models have also been used to study methods to alleviate costly and harmful dredging, to modify river training structures for habitat creation, and to protect pristine environmental areas. The models have been used in conjunction with several biological impact studies to examine endangered species, including the Pallid Sturgeon and the Least Tern.

Numerous environmental projects have been implemented as a result of the use of Micro Models. These include the environmental enhancement of several Mississippi River side channels and improvements to sediment and flow conditions on the Mississippi River. Several other projects are currently being designed or studied.

One of the greatest advantages provided by a Micro Model is the ability to convey highly complex hydraulic concepts to non-technical, non-engineering clients and partners. This allows various river and stream partners to participate in the discussions, solutions, and designs. For the first time in history, a device exists that enables multifaceted interest groups to work together toward a single goal.



The Costs



The Mississippi is an ever-changing, dynamic river. The constant evaluation, the continual monitoring and the flexibility to react to the river's mood, requires continual updating of the project. The costs associated with the implementation of the *Environmental River Engineering Project* are inseparable from the channel improvement program and all design modifications have been incorporated into the program. The costs of coordinating with various interest groups, agencies, etc., are considered a part of the design process.

As a result of this environmental engineering project, significant environmental habitats have been created which have increased the diversity of the riverine environment at *no additional cost* to the channel improvement program or the American Taxpayer. What value can be placed on creating a healthy ecosystem?

- Endangered Species have been provided with increased nesting and spawning habitat, away from man's interference.
- Greater diversity can be measured in the number of habitats available and in the number of species occupying these environments.
- River engineering designs have achieved environmental and economic goals in a cost-effective, self-sustaining manner.

The Future

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The process of improving the biological diversity of the Middle Mississippi while maintaining its use as a navigation resource is ongoing. New problem areas on the Mississippi will appear, each one requiring a different solution. Notched dikes continue to be studied to determine the best location, width and depth of the notch. In addition, the role of river levels and their affect on navigation and biological systems is being studied.



The Future

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Applications

“ There was a time when Conservation was off on our own mission and the Corps was off on their own mission and we were not communicating with each other. Opening the lines of communication between the two agencies helps us both achieve our mutual goals. This open communication is, in many respects, our greatest achievement.”

*- Norm Stuckey, Fishery Biologist,
Missouri Department of
Conservation*

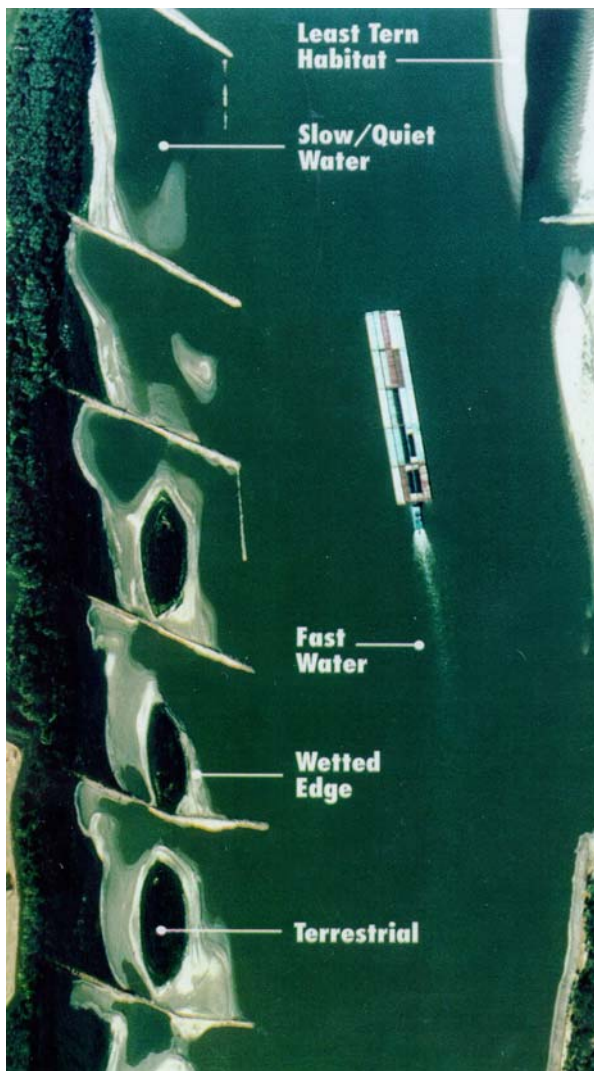
The environmental structures on the Middle Mississippi River are being used as models for similar structures on the Upper Mississippi as well as on other rivers. More importantly, the partnership between the river biologists and river engineers has set a new standard of achievement and cooperation. Similar teams and testing methods are being patterned after the St. Louis partnership in other Corps districts across the country.

It is the recognition and respect of each other's concerns and priorities that has fostered the cooperation and built the framework for the design and implementation of these environmentally sensitive structures.

The Conclusion

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Navigation structures that work in harmony with the river have always been a priority. By developing a greater understanding of the need for habitat diversity through partnerships with river biologists, river engineers are able to design structures that afford an even greater harmony with the natural laws of the river without compromising navigation effectiveness. It's a situation in which everyone wins—man, nature and the river.



“nature overlooks nothing and we may confidently assume that the position and direction of the river at any time is the resultant of all the forces, and consequently, is a concrete expression of the law of the stream, which we may modify and preserve, but not safely destroy or radically change.”

- Colonel James H. Simpson, 1875

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In 1994, Micro Modeling received an innovation award from the St. Louis Academy of Science. In 1997, U.S. Patent Number 5653592 was granted to the U.S. Army Corps of Engineers for the Micro Modeling technology.



Atchison, Gary J., et. al., 1986. Aquatic Biota Associated with Channel Stabilization Structures and Abandoned Channels in the Middle Missouri River, Technical Report E-86-6, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Burch, Cary, et. al., 1984. Environmental Guidelines for Dike Fields, Technical Report E-84-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Davinroy, Robert D., 1990. Bendway Weirs, A New Structural Solution to Navigation Problems on the Mississippi River, Permanent International Association of Navigation Congresses, Bulletin No. 73, Osaka, Japan.

Davinroy, Robert D., Rapp, Jerry, and Myhre, Roger, 1998. Hydrodynamic and Hydroacoustic Study of Fishes in Bendway Weir Fields of the Middle Mississippi River, American Society of Civil Engineers, Wetlands Engineering and River Restoration Conference, Denver, Colorado.

Davinroy, Robert D., Redington, Stephen L. and Strauser, Claude N., 1996. Design of Blunt Nosed Chevrons in the Mississippi River for Sediment Management, Sixth Interagency Sedimentation Conference, Las Vegas, Nevada.

Davinroy, Robert D., 1996. Micro Scale Physical Sediment Modeling (Micro Modeling) of Inland

Henderson, Jim E. and F. Douglas Shields, Jr., 1984. Environmental Features for Streambank Protection Projects, Technical Report E-84-11, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Nunnally, Nelson R. and Linda B. Beverly, 1986. Morphologic Effects of Lower Mississippi River Dike Fields, Miscellaneous Paper E-84-11, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Niemi, Jack R. and Strauser, Claude N., 1991. "Environmental River Engineering," Permanent International Association of Navigation Congresses, Bulletin No. 73.

Polovina, Harry N., et. al., 1983. Evaluating Changes in Dike Field Fishes with Community Information Indices, Technical Report E-83-14, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Smith, Roger H., et. al., 1982. The influence of Channel Regulating Structures on Fish and Wildlife Habitat, University of Missouri-Rolla, Institute of River Studies and Missouri Department of Conservation.

Way, Carl M., et. al., 1992. Effects of Surface Texture of Articulated Concrete Mattress Blocks on Their Habitat Value, Report 19, Lower Mississippi River Environmental Program, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.